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DEPARTMENT OF THE INTERIOR OF CANADA

Hon. W. J. ROCHE, Minister; W. W. CORY, Deputy Minister

Irrigation Branch—E. F. DRAKE, Superintendent

REPORT OF THE PROCEEDINGS OF THE
TENTH ANNUAL CONVENTION
OF THE
WESTERN CANADA
IRRIGATION ASSOCIATION

HELD AT

KAMLOOPS, B.C.

July 25, 26 and 27, 1916

Published by the authority of the Hon. W. J. Roche,
Minister of the Interior

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Delegates to the Tenth Annual Convention of the Western Canada Irrigation Association
July 25 to 27, 1916, Kamloops, B.C.

DEPARTMENT OF THE INTERIOR OF CANADA

Hon. W. J. ROCHE, Minister; W. W. CORY, Deputy Minister

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Lethbridge, Alberta, 1909

Kamloops, British Columbia, 1910

Calgary, Alberta, 1911

Kelowna, British Columbia, 1912

Lethbridge, Alberta, 1913

Penticton, British Columbia, 1914

Bassano, Alberta, 1915



HON. SEN. H. BOSTOCK



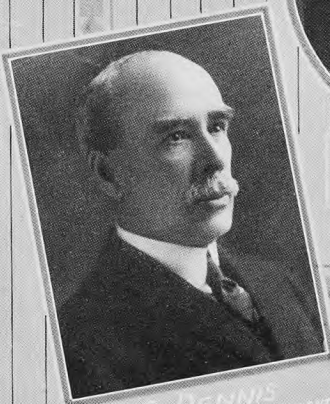
HON. W. J. ROCHE
MINISTER OF THE INTERIOR



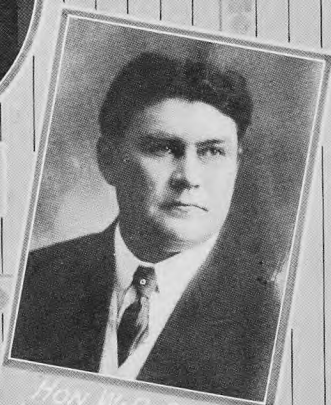
HON. DUNCAN MARSHALL
MINISTER OF AGRICULTURE,
EDMONTON, ALTA.



R. J. C. STEAD
ACTING SECRETARY
OF THE ASSOCIATION



J. S. DENNIS
ASSISTANT TO THE PRESIDENT
C. P. R.



HON. W. R. ROSS
LATE MINISTER OF LANDS,
VICTORIA, B. C.



CAPT. NORMAN S. RANKIN
CALGARY, ALTA.



CAPT. J. C. DUFRESNE
PENTICTON, B.C.



LIEUT. C. W. DICKSON
KELOWNA, B.C.

Officers of the Association now on Active Service

OFFICERS FOR THE YEAR 1915-1916

Honorary President—HON. W. J. ROCHE, Minister of the Interior, Ottawa.

Honorary Vice-President—J. S. DENNIS, Calgary.

President—HON. W. R. ROSS, Minister of Lands, Victoria, B.C.

First Vice-President—HON. DUNCAN MARSHALL, Minister of Agriculture,
Edmonton, Alberta.

Second Vice-President—HON. SENATOR BOSTOCK Ducks, B.C.

EXECUTIVE

Chairman—F. H. PETERS.

F. MAURICE SMITH, Penticton, B.C.

J. L. BROWN, Kamloops, B.C.

W. E. SCOTT, Victoria, B.C.

R. A. TRAVIS, Bassano, Alta.

G. R. MARNOCH, Lethbridge, Alta.

JOSEPH DIXON, Maple Creek, Sask.

JAMES JOHNSTONE, Nelson, B.C.

Permanent Secretary—NORMAN S. RANKIN, Calgary, Alberta.

LOCAL BOARD OF CONTROL

Chairman—J. L. BROWN.

MAYOR TYRRELL.

ALDERMAN JOHNSTONE.

S. C. BURTON.

J. F. SMITH.

E. S. WOOD.

ALDERMAN DOBSON.

H. S. MYTTON.

CAPT. WORSNOP.

DR. GEORGE.

Secretary—C. E. LAWRENCE.

Treasurer—H. B. ADAMS, Manager, Bank of Hamilton.

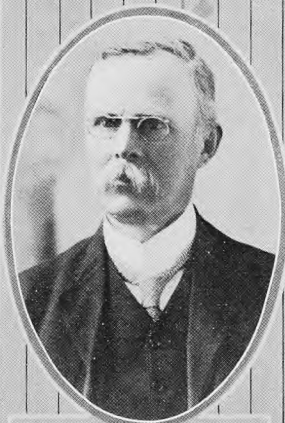
Official Reporter—G. A. MORRISON, Calgary.



*J. JOHNSTONE
NELSON, B.C.*



*J.L. BROWN
PRESIDENT AGRICULTURAL SOCIETY,
KIMLOPS, B.C.*



*F.M. SMITH
PENTICTON, B.C.*



*W.E. SCOTT
DEPUTY MINISTER OF AGRICULTURE,
VICTORIA, B.C.*



*F.H. PETERS
COMMISSIONER OF IRRIGATION
CALGARY, ALTA.*



*G.R. MARNOCH
PRESIDENT, BOARD OF TRADE,
LETHBRIDGE, ALTA.*



MAYOR TYRRELL
KAMLOOPS B.C.



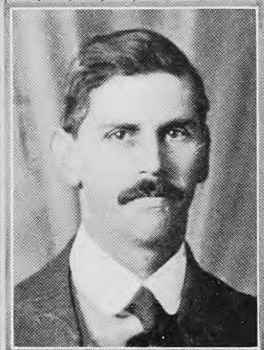
C.E. LAWRENCE
KAMLOOPS B.C.



CAPTAIN WOLSNOP
KAMLOOPS B.C.



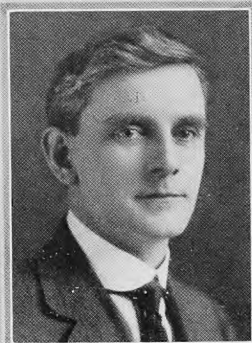
ALD. D.B. JOHNSTONE
KAMLOOPS B.C.



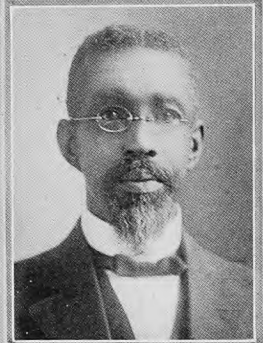
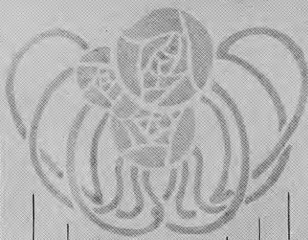
DR. H.H.S. GEORGE
KAMLOOPS B.C.



S.C. BURTON
KAMLOOPS B.C.



ALD. J.E. TEDDEN
KAMLOOPS B.C.



JOHN F. SMITH
INDIAN AGENT
KAMLOOPS B.C.

PROGRAMME

TUESDAY, JULY 25

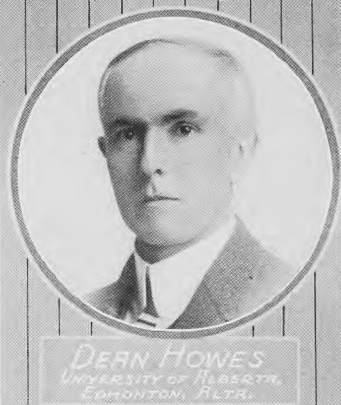
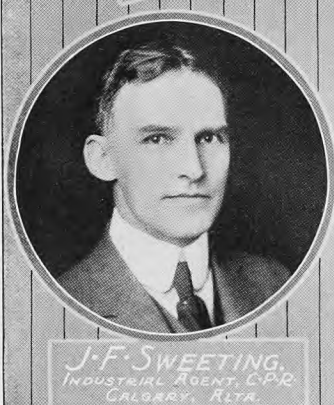
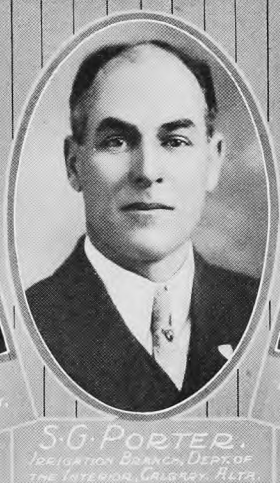
- 9.30—Delegates and visitors will assemble in the Opera House and, led by the orchestra, will rise and sing "God Save the King."
- Call to Order.—The Honourable W. R. Ross, President of the association, will call the meeting to order and declare the Tenth Annual Convention formally opened.
- Invocation.
- 9.45—Welcome to the province, by the Honourable W. J. Bowser, Premier of British Columbia.
- 10.00—Welcome to the city, by His Worship, Mayor Tyrrell.
- 10.10—Introduction of Mr. J. L. Brown, Chairman, Local Board of Control.
- 10.20—President's address: Honourable W. R. Ross.
- 10.40—Secretary's report: Mr. Norman S. Rankin.
- 10.50—Address, by the Honourable D. Marshall.
- 11.15—Address, by Mr. J. S. Dennis, Assistant to the President, C.P.R.
- 11.30—Address, by Mr. E. F. Drake, Superintendent of Irrigation, Ottawa.
- 11.45—Address, by Mr. T. A. Hargrave, President, Cypress Hills Water Users' Association, Maple Creek.
- 12.00—Appointment of Committees on Credentials and Resolutions.
Adjourn for luncheon.

Show respect to the Chair by being punctual.

AFTERNOON SESSION

- 2.00—Address: The Honourable W. A. Motherwell, Minister of Agriculture, Saskatchewan, or representative.
- 2.15—Dr. Wesbrook, President University of British Columbia, "Agricultural Education in British Columbia."
- 2.50—Prof. E. A. Howes, Dean, Faculty of Agriculture, University of Alberta, "Agricultural Education in Alberta."
- 3.25—Fifteen minutes' discussion of previous addresses.
- 3.45—Dr. J. G. Rutherford, C.M.G., Superintendent of Agriculture and Animal Husbandry, Canadian Pacific Railway, Calgary.
- 4.20—Prof. W. T. MacDonald, Live Stock Commissioner, British Columbia, "Live Stock and Irrigation."
- 4.45—Fifteen minutes' discussion of previous addresses.
Adjournment.

Punctuality is the first principle of order.



Some of the Speakers at the Convention



DR. WESBROOK
COLUMBIA UNIVERSITY,
VANCOUVER, B. C.



R. H. CAMPBELL
DIRECTOR OF FORESTRY,
OF CANADA, ONT.



PROF. KLINGE
UNIVERSITY OF BRITISH COLUMBIA,
VANCOUVER, B. C.



PROF. THORNER
PULLMAN WASHINGTON,
U. S. A.



DR. TALMIE
DEPT. OF AGRICULTURE, VICTORIA,
B. C.



DR. RUTHERFORD
SUPERINTENDENT OF AGRICULTURE,
C. P. R. CANADA, ALTA.



JAMES WHITE
COMMISSIONER OF CONSERVATION,
OTTAWA, CAN.



F. H. AULD
DEPUTY MINISTER OF AGRICULTURE,
SASKATCHEWAN

EVENING SESSION

8.00—Alderman J. E. Tedder, Chairman, Hydro-Electric Committee, Kamloops, British Columbia, "The Possibilities of Irrigation by a Hydro-Electric Power Plant in the Thompson Valley."

8.30—Discussion.

8.45—Prof. W. S. Thornber, State College of Agriculture, Pullman, Washington. Illustrated lecture—"Irrigation, a Factor in Community Development."

This session will conclude with an interesting function to be announced at the conclusion of Professor Thornber's lecture.

Don't YOU be absent when the Chairman takes his seat.

WEDNESDAY, JULY 26

MORNING SESSION

9.30—Mr. W. E. Scott, Deputy Minister of Agriculture, Victoria, British Columbia, "Patriotism, Production and Progress in Agriculture."

10.00—Mr. G. R. Marnoch, President of Board of Trade, Lethbridge, Alberta, "The Farmer and the City Man."

10.30—Fifteen minutes' discussion on previous addresses.

10.45—Mr. D. W. Strachan, Superintendent, Alexandra Ranch, Tranquille, "Mixed Farming."

11.15—Mr. F. H. Peters, Commissioner of Irrigation, Department of the Interior, Calgary, "Irrigation Districts Acts."

11.45—Preliminary Reports—Committee of Credentials—Committee of Resolutions.

Adjournment.

Time, Tide and the Automobile wait for no man.

AFTERNOON SESSION

Excursion to Tranquille. Owners of motor cars have kindly undertaken transportation of delegates and visitors to the far-famed Edward VII. Sanatorium and the Alexandra ranch. Those desirous of making this trip will please hand in their names in writing to the Secretary at the earliest moment.

Cars will leave the Opera House immediately after luncheon.

On the return journey a call will be made at the Home Farm, Fruitlands, by invitation of Mr. H. F. Mytton, where the transformation of desert land into lovely surroundings proclaims the home-making character of irrigation.

Time, Tide and the Chairman wait for no man.

EVENING SESSION

8.00—Professor L. S. Klinck, Dean of the Faculty of Agriculture, University of British Columbia—an illustrated lecture on “Improvements in Corn Varieties.”

8.30—Mr. Don. H. Bark, Chief of Irrigation Investigations, C.P.R., Strathmore, Alberta—Illustrated lecture on “Practical Irrigation.”
Discussion on previous addresses.

9.00—Mr. J. F. Sweeting, Industrial Agent, C.P.R., Calgary, “The Possibility of Sugar Beet Growing in Alberta.”

Discussion led by Mr. P. H. Moore, Agassiz.

Adjournment.

Treat the Chairman with respect by being punctual.

THURSDAY, JULY 27

MORNING SESSION

9.30—Mr. Wm. Young, Provincial Comptroller of Water Rights, “Conservation and Distribution of Water.”

10.00—Discussion.

10.30—Final Report of Committee on Credentials. Final Report of Committee on Resolutions.

11.30—Professor P. H. Moore, Superintendent, Dominion Experimental Farm, Agassiz, “Grading up a Dairy Herd.”

12.00—Discussion.

Adjournment.

AFTERNOON SESSION

2.00—Mr. R. M. Winslow, Provincial Horticulturist and Inspector of Fruit Pests, “Apple Orcharding under Irrigation Conditions.”

2.30—Mr. W. H. Fairfield, Superintendent Dominion Experimental Farm, Lethbridge, Alberta, “Growing Winter Feed Under Irrigation.”

2.45—Mr. A. L. Fryberger, Bassano Colony, Alberta, “Varieties of Crops Successfully Produced in Bassano Colony.”

3.15—Discussion.

3.30—Notices of Motion.

Next place of meeting.

Election of officers.

EVENING SESSION

A trip to Mission ($2\frac{1}{2}$ miles) to see individual irrigation by water pumped from the Thompson river by the city of Kamloops hydro-electric plant at Barriere, forty miles distant, or

A personally conducted tour of the grounds of the hospital, provincial home and gaol, or

An evening visit to Fruitlands House and the Home Farm, by invitation of Mr. H. F. Mytton, or

Address by Mr. Fryer, Dominion Seed Department, "Production of Home-grown Field and Garden Seeds to Supersede Foreign Importations," or

Entertainment at the theatre.

Delegates and visitors staying after the convention should give early notice to the local Secretary in order that arrangements may be made to inspect irrigated lands or irrigation plants in the vicinity.

FRIDAY, JULY 28

The last session of the 1916 convention will be held in the Kamloops station of the Canadian Pacific Railway on Friday morning, the 28th inst.

8.00—The meeting will be called to order by the President, Honourable W. R. Ross, or, in his absence, by the Vice-President, Honourable Senator Bostock.

8.30—Arrival of H.R.H. The Duke of Connaught and Strathearn, K.G., etc., etc.

Introductory speech by the President, who will ask His Royal Highness to become patron of the association and accept the badge.

8.35—His Royal Highness will inspect the wounded soldiers returned from the front.

8.40—Convention will adjourn by singing the national anthem.

Departure of the vice-regal train.

CONVENTION RULES

Each morning session shall be called to order at 9.30, each afternoon at 2, and each evening session at 8. Morning session shall adjourn at 12.30 p.m., unless otherwise ordered by vote of the convention. All sessions shall open promptly.

Any delegate or other member desiring to speak shall address the Chair, and unless called on by name, shall begin by giving his name and place. Communications on subjects not entered in the programme will be limited to five minutes unless otherwise directed by vote of the convention.

General resolutions, after reading, shall be referred to the Committee on Resolutions without debate, and no general resolution shall be received after the opening of the convention without unanimous consent. Special resolutions relating to the conduct of the association may be read and considered at the discretion of the presiding officer after examination by him.

The time of speakers in general discussion shall be limited to ten minutes, and the time of speakers on questions or resolutions relating to the conduct of the convention shall be limited to five minutes unless otherwise directed by vote of the convention.

For the convenience of the convention and speakers, a bell will ring once three minutes before the close and twice at the close of the time allotted to each speaker on the programme. In the course of discussion and in addresses not entered on the programme, the bell will ring once one minute before the close and twice at the close of the time allotted to the speaker under these rules.

Any speaker rising to address the convention, who is in the employ, whether by retainer or otherwise, of any public service corporation which is interested in the action or subjects of deliberation of this convention, shall mention the fact and nature of such employment before proceeding to speak.

Report of the Proceedings
of the
Tenth Annual Convention
of the
Western Canada Irrigation Association
Held at Kamloops, B.C.
on
July 25, 26 and 27, 1916

OPENING SESSION—Tuesday, July 25—9.30 a.m.

The Tenth Annual Convention of the Western Canada Irrigation Association opened in Kamloops, B.C., on Tuesday, July 25th, at 9.30 a.m.

In the unavoidable absence of the President and Vice-President, the Chair was taken by the Honourable Senator Bostock, Second Vice-President.

In calling the convention to order, the Chairman said: "Ladies and Gentlemen, —In the absence of the Honourable Mr. Ross, the President of this association, it has devolved upon me to act as Chairman of this convention. It is my pleasant duty to declare this, the Tenth Annual Convention of the Western Canada Irrigation Association, formally open, and we will ask all to rise and join in singing 'God Save the King.' "

At the conclusion of the singing of the national anthem the Chairman said: "Our programme will be commenced by an invocation by the Rev. W. Littler of St. Paul's Church, Kamloops." The Rector then led the convention in prayer.

CHAIRMAN: The next item on our programme is an address of welcome which was to have been given by the Honourable the Premier of the province of British Columbia. In his absence I am going to call on Dr. Tolmie, who, as you know, is well acquainted with the resources of this province. (Applause.)

DR. TOLMIE: Mr. Chairman, Ladies and Gentlemen,—This request to give you an address of welcome only reached me a few moments ago, otherwise I would perhaps have been a little better prepared. We have a great deal of pleasure in extending to you all a welcome to this province of British Columbia. To those of you who have come some distance to attend at this convention and to our friends to the south of the line who have joined us on this occasion, we feel that this is perhaps one of the most important meetings with regard to agriculture that has been held in this province. We have in the dry belt of British Columbia an area very productive if handled under proper conditions and under proper irrigation methods. We feel that the possibilities here for agriculture are very great indeed. At the Coast we have already made a success of different lines of agriculture, and in regard to dairying, it has been proved there that given proper conditions and proper methods of feeding, we are able to compete with the best dairying sections of the world. The same applies to the irrigated portions of British Columbia and in the unirrigated portions where good dry land farming methods have been properly applied. We have produced mutton, but, unfortunately we have sold at the wrong time and we find that Alberta producers have got better prices by selling at the proper times of the year. I notice on one piece of literature supplied at this convention a picture of Glencarnock Victor, produced by Mr. J. A. McGregor, of Brandon. This great animal was taken by Mr. McGregor to Chicago, where he swept the board in competition with animals from the famous corn belt. The question of producing stock of this kind here in British Columbia is a matter that should be given some attention at the present time. While we have in this province large areas of uplands that will eventually be put under cultivation, we are importing four million dollars' worth of agricultural products from the Prairie provinces and from the South country. This should not be so. These products or the great majority of them should be grown at home and these large areas turned into grazing lands for stock and otherwise increase the production here as much as possible.

I do not mean to take up any more of your time. I notice the names of many good people on your programme who have good papers and many of them are noted speakers, some of whom are known throughout the world.

I wish to extend to you all a most hearty welcome to the province of British Columbia and hope that this convention will have very excellent results in furthering irrigation and agriculture here.

CHAIRMAN: The next item on the programme is an address of welcome from His Worship the Mayor of Kamloops. Those who live in Kamloops well know the Mayor, and I think it is rather unnecessary for me to say anything further in introducing Mr. Tyrrell to you. (Applause.)

MR. TYRRELL: Mr. Chairman, Ladies and Gentlemen,—It is a great privilege to be able to say something in a few words of welcome to the Western Canada Irrigation Association. I remember six years ago this convention meeting here, and it was a worthy incentive to the citizens and farmers of Kamloops and this district. The papers read at that convention were of great value and of much interest. I might say in this connection that the farmers and citizens of this city have taken advantage of the good seed sown in 1910 by your delegates. In 1910

Kamloops brought in about 90 to 95% of the grain that it used here. In 1915-1916 as well as supplying all the needs of Kamloops, the farming community have shipped out of Kamloops some 125 cars of grain. Where we used to bring in 90% of our needs we now have some to ship away. This, I think, shows that we are waking up to our possibilities here and have done something. This has been brought about by irrigation being more scientifically applied to the land; by intensive farming; by better methods of dry farming; and, I think, by better profits being made. Since the farmers commenced going out to the semi-arid hills that were only cattle ranges and there taking up lands, Providence seems to have blessed this land with more moisture each year. I am sure Dr. Tolmie will be interested to know that we have produced 40 to 45 bushels of wheat to the acre without irrigation in many sections adjacent to the city.

I am not a farmer or a speaker, but I certainly know that the farmers of this district appreciate having this convention here again, as do all the citizens of this city. The leaders in intensified farming are coming to this convention and I wish to assure you all that the entire freedom of the city is yours. The police force will disappear as far as a delegate or person with a badge is concerned. The town is yours for three days and we know you will do us good and in our humble way we appreciate it. Mr. Chairman, I thank you for allowing me to extend a welcome to the delegates. (Applause.)

CHAIRMAN: I will now call upon Mr. J. L. Brown, Chairman of the Local Board of Control, who has done such good work in getting the convention to meet in Kamloops.

MR. BROWN: Mr. Chairman, Ladies and Gentlemen,—I do not know why I should be down on this programme at all. I notice there is another speaker who will give an address somewhat like mine. However, although you have been welcomed to this city by an address from the representative of the Premier for the province, and also from the Mayor for the city, I as Chairman of the Local Board of Control, wish to extend a hearty welcome to all the delegates and their friends who have come here to this convention. I wish to pay a tribute to the Local Secretary here, because if a man ever worked to make a convention a success, Mr. Lawrence certainly did. One thing only was overlooked, I am afraid, and that is the citizens of Kamloops somehow seem to have thought they were not asked to come to this convention, but I think that will be remedied when the papers come out this afternoon. The Chamber of Commerce has taken active steps to have the national highway built from Princeton to the Coast. I have just been thinking that the Chamber of Commerce and the citizens might have been using their energies better in endeavouring to finish a road from the North Thompson to Edmonton, the inland capital of Alberta. There are lots of farmers in Alberta who have lots of money and who would like to live somewhere else besides on the prairie. The first thing they do is to head for Vancouver and they therefore do not know anything about this part of British Columbia. If they did I imagine they would settle down here. I had thought that some of the members of the Alberta Government and the British Columbia Government would be here and I would then bring it to their attention. I think it would be a great thing for the province

and would bring the people of the two provinces together, because in one of our long summer days you could make the trip in an automobile from Kamloops to Edmonton. (Applause.)

I would like to pay a tribute to our Permanent Secretary, as we have called him, but, I believe, we are now going to lose him. Any one who has been a delegate to these conventions will know that we will surely miss the services of Mr. Rankin and I think we should honour him all the more when we think of the position that Mr. Rankin is throwing up to fight for the Empire and Freedom. (Applause.) Lots of people think that the soldier's life is an easy life and one of lots of sunshine, but it is not. I would like to quote a story I read in a recent issue of the "Ranger," which may shed some light on the life of the soldier.

"He was a raw recruit. They took him to the barracks and changed his clothes. They took his name and then told him his number was 575. Then they marched him off to Church on Sunday—a place where he was quite a stranger. The minister got up to announce a hymn and said, 'We will now sing'—at this point the recruit awoke from his doze,—'No. 575, Art Thou Weary, Art Thou Languid.' In a clear voice the recruit said, 'Not a d—— bit.' He wondered afterwards why they gave him seven days C.B."

So the soldier's life is not so very easy outside of the trenches either.

I would like to say more than I dare, for after looking over the programme and knowing the speakers as well as I do, I know I will not get a chance to say any more at this convention.

There is another statement I was going to make in discussing irrigation and dry farming and comparing the methods. I am a dry farmer and have been for four years. I never hear the irrigators say anything about this. It pays better to dry farm in a wet year than it does to dry farm in a dry year (Laughter), and that is one point I have proven beyond a doubt. I meant to tell that at Bassano at the banquet, but I never got the chance. I know we have had dry years out here, but the wet years were very easy sailing and the dry years made pretty hard going.

I wish to extend a hearty welcome to all those attending the convention. If there is anything you want to know or anywhere you want to go, come to the Local Board of Control and we will do our best to inform you. (Applause.)

CHAIRMAN: The next item on the programme is an address by the President.

As I was only told that I had to occupy the Chair in the absence of the President a short hour ago, I do not think that I can fill that position and give you an address at the present time. I might make a few remarks on the questions that interest those in this part of the country particularly.

As you all know and as Mr. Brown has just stated that while very much interested in this question of water and this part of British Columbia, we have been struggling with it a great many years. Unfortunately this year we have had more water than usual and I was rather afraid before I arrived here this morning that we would not have a bright day, but instead have a day that has been so troublesome to the farmers putting up hay, because the rain has been interfering with their operations. However, I see we are going to have a bright day so that the visitors will see the usual weather of Kamloops. This year has not been, however, an ordinary year.

When I came here some twenty-four years ago, the question of irrigation was not so far developed as it is at the present time and we have in this particular dry belt of British Columbia, had to learn by "rule of thumb," and follow out the question of irrigation as best we could, rather than learn from properly designed plans laid down by irrigation engineers and others who have studied the question for years. What we have been trying to do is to see how much we could raise in the way of crops from the land and we did not altogether pay attention to the question of the amount of water we have used. Now that so many more people are coming into the country we are faced with this question of making the water go as far as we can and I think those who have been irrigating for a number of years realize that they raise their best crops by using as small an amount of water as is possible to cause the crops to grow. By so doing the quality of the crops is so much higher than when using a large quantity of water.

I am very sorry indeed that the Minister of Lands of this province is not here to-day, because I think the people of this district would have liked to have seen him to discuss the question of water with him on terms that we have not had an opportunity of doing for a long time. This question of water affects this portion of the country very materially and we have a great many problems ahead of us and I think a good many of the irrigators in this district feel a little apprehensive as to the proper method of working them out.

I hope that in the papers and discussions at this convention some attention will be given to this situation so that we can get some enlightenment on this question of water which, to this part of the country at least, is a very serious one.

I do not propose to take up your time any longer, ladies and gentlemen. I am glad to see so many visitors here from the States to the south of us and from the other provinces, and I hope that they will enjoy their visit to Kamloops and go away with a very good impression of Kamloops and the surrounding country. (Applause.)

CHAIRMAN: I will now call upon the Secretary to make his report.

MR. RANKIN: Mr. Chairman, Ladies and Gentlemen,—It is exceedingly gratifying to me as secretary of your association, to come before you here to-day and make report of our work since your last convention, and though the season has been the shortest in our history owing to the fact that our last meeting took place only in November, yet I hope you will feel that the work done during this brief period has been sufficient and worth while.

To sum it up briefly—the detail will duly appear in the annual report—it covers the following-up to conclusive action of our last meeting's resolutions; the financing of our affairs through grants from the Dominion and Provincial Governments of Alberta and British Columbia; a resultful campaign to induce settlers on the irrigated districts to beautify and improve their farms by the planting of wind-breaks and shade-trees which we secured for them free of cost; assistance rendered the Cypress Hills Water Users' Association with their annual meeting, and the usual issue of publicity through the press of the three western provinces. An executive meeting was held at Field during April, which reviewed the work accomplished to date, and outlined that to be done during the balance of the year. The

minutes of the meeting will be found set out in this report for the benefit of all concerned.

RESOLUTIONS

Regarding the resolutions passed at our last meeting, full details of all of which will be found on the files open for inspection by delegates on the table below I will here touch on only one or two of the most important.

Mr. S. S. Dunham, Vice-President of the United Farmers of Alberta, seconded by President Marnoch of the Lethbridge Board of Trade, moved a resolution urging the Dominion Government to proceed with irrigation surveys in the southern country and in due course the matter was laid before the Right Honourable Sir R. L. Borden and the Honourable Minister of the Interior at Ottawa, both of whom replied that this work would be proceeded with without any halt. On April 29th as will be noted from the minutes of the executive meeting held at Field, Commissioner F. H. Peters corroborated this statement with the statement that "the work of irrigation surveys in southern Alberta was being prosecuted as actively as possible."

Mr. C. W. Peterson, editor of the Farm and Ranch Review, moved a resolution urging the Dominion and Provincial Governments to institute enlarged educational propaganda through the alfalfa field and breeding of live stock. I will let the replies from Deputy Minister of Agriculture, W. E. Scott, of British Columbia and Acting Deputy Minister of Agriculture, F. S. Auld, of Regina, speak for themselves as to what has been done in this respect, only adding that the reports are of progress all round, while Alberta is summed up very completely in a neat little 40-page folder issued by Mr. Don H. Bark, formerly Chief of Irrigation Investigations at Idaho, now occupying a similar position with the Canadian Pacific Railway at Strathmore. In mentioning this gentleman, I would like to point out that this association may take all the credit for the bringing of this valuable man from the United States to this country as it was through hearing Mr. Bark's address given at the Pentteton convention that Dr. Rutherford decided to induce him to come over and help us. A copy of this pamphlet (Alfalfa and Mixed Pasture Grasses) can be secured upon application to Mr. Bark.

VICTORIA, May 16, 1916.

NORMAN S. RANKIN, Esq.,
Secretary, Western Canada Irrigation Association,
P.O. Box 1317,
Calgary, Alberta.

DEAR MR. RANKIN,—I am in receipt of your letter of the 5th inst., enclosing copy of resolution passed at the Bassano convention last November, with reference to educational propaganda re alfalfa.

I enclose an article describing what this province has been doing in the last few years, and the policy of this department in encouraging alfalfa growing. You will notice that the acreage in alfalfa in the province was double in 1915 what it was in the year 1913. Our twelve demonstration plots in different parts of the province have undoubtedly been largely responsible for this satisfactory increase in this most lucrative crop.

Our distribution of alfalfa seed all over the province has also helped towards popularizing the growth of alfalfa amongst farmers. I look forward to seeing a larger proportionate increase in the near future. There are so many parts of the province that can grow alfalfa to the very best advantage.

In the Thompson valley, I saw last year a crop that was having its fourth cutting. The owner told me that his yield was over nine tons an acre. Of course, this is very exceptional, but I think in our irrigated districts that the average yield of alfalfa per acre would run about five tons.

Trusting that the article that I have submitted is suitable,

Yours very truly,

WM. E. SCOTT,
Deputy Minister.

ALFALFA IN BRITISH COLUMBIA

During the last four years the acreage seeded to alfalfa in British Columbia has more than doubled. This increase is largely due to the action taken by the British Columbia Department of Agriculture. (Note the increase as shown in the January edition of the Census and Statistics Monthly):

Acreage in alfalfa in B.C. in 1913	6,700 acres.
Acreage in alfalfa in B.C. in 1914	8,500 acres.
Acreage in alfalfa in B.C. in 1915	12,100 acres.

In 1913 the department selected 12 plots of one acre each scattered over the province, so that most conditions of soil and climate were represented. The department conducted on these acre plots careful investigational and demonstration work in the growing of alfalfa. In all cases the seed was supplied by the department. All expense in connection with the growing of the crop, and in many cases, a rental was paid by the department. The work on these plots was continued for two or three years under the supervision of experts from the department.

At the same time at several of our Investigation Stations experimental work was being carried on as to the best way to cultivate alfalfa, and to determine the possibilities for the local production of alfalfa seed.

In addition to this, for the past three years the department has distributed 5 samples of alfalfa seed, at greatly reduced prices, to members of Farmers' Institutes desiring to test the crop, while alfalfa seed for general seeding was distributed to the farmers at less than cost. The 5 samples were distributed with a view to carrying on co-operative tests and determining the suitability of the alfalfa crop to the various districts.

The immediate results of this policy, as indicated above, have been remarkable. It has been proven quite conclusively that alfalfa is the very best fodder crop for irrigated sections, and it is in these sections that the remarkable increase in the acreage seeded to alfalfa, indicated above, has taken place.

To supplement the investigational work with alfalfa and to demonstrate the value of this crop to the farmers of the irrigated sections, experts from the department have annually placed the results of the work of the Investigational Stations and of the co-operative tests before the farmers at the annual meetings of Farmers' Institutes, and at special lectures arranged for this purpose.

Owing to the size of the average farm of this province it would be hard to locate farmers in many localities who could afford to set aside five acres during any one year for experimental work in the growing of alfalfa.

This explains the action of the department in the selection of one-acre plots for this purpose.

REGINA, May 16, 1916.

NORMAN S. RANKIN, Esq.,

Secretary Western Canada Irrigation Association,
P.O. Box 1317, Calgary, Alberta.

DEAR SIR,—Your letter of the 5th inst. addressed to the Honourable Mr. Motherwell with copy of the resolution moved by Mr. C. W. Peterson and passed by the last annual convention of your association has been handed to me for attention in the absence of the Minister. The Government of Saskatchewan is keenly alive to the importance of extending the live stock industry in the province and in this connection realizes the importance of alfalfa among the forage crops. About five years ago the Government lent its support to a province-wide competition in the growing of alfalfa and contributed prizes in connection therewith to the extent of \$6,500.00. During the currency of the competition ten-acre fields of alfalfa were planted by a large number of farmers and it is probably safe to assume that several times as many farmers tested smaller areas with this important leguminous crop. A demonstration given through competitions, of the successful culture of alfalfa, we think, proved satisfactorily to all concerned the place which alfalfa is likely to take in Saskatchewan agriculture. You are no doubt aware of the fact that irrigation projects in Saskatchewan are few and of minor importance as compared with similar undertakings in Alberta and for this reason a strict compliance with the terms of the resolution which you forwarded to the Minister would affect only a very small proportion of the farmers of this province. I wish therefore to point out that in what we have done and in what we are doing the Government of Saskatchewan and the College of Agriculture have anticipated the resolution and as a result of the action to which I have referred a great many farmers in this province are now growing alfalfa. Our policy in connection with the introduction of live stock is outlined in the enclosed circular. Fuller details are contained in the annual report of the department, copies of which I believe are in your possession.

Yours faithfully,

F. S. AULD,
Acting Deputy Minister.

EDMONTON, July 22, 1916.

N. S. RANKIN, Esq.,

Secretary, Western Canada Irrigation Association,
Kamloops, B.C.

DEAR MR. RANKIN,—With respect to your alfalfa resolution passed last year, I am enclosing you an article which I wrote for the *Canadian Farm* that will give you the best explanation of what we are doing to encourage alfalfa in the province of Alberta.

I regret that I am unable to attend the convention as I had up until to-day expected to be able to go. However, I am sending Mr. James McCaig of my department and Mr. E. A. Howes, dean of the Faculty of Agriculture at the university is also going. Mr. McCaig, as you are aware, is the author of our *Elementary Agriculture* for public schools in Alberta and is very competent to represent the department.

I am,

Yours very truly,

DUNCAN MARSHALL,
Minister of Agriculture.

"CANADIAN FARM," May 26, 1916.

PRODUCING ALFALFA SEED IN ALBERTA

HOW THE NEED FOR HOMEGROWN SEED HAS BEEN MET—A PRACTICAL SCHEME
BEING WORKED OUT THROUGH THE SCHOOLS OF AGRICULTURE

By HON. DUNCAN MARSHALL, Minister of Agriculture

When reading the editorials in *Canadian Farm* of April 28, I noticed with interest your article on "Alfalfa," and particularly the opening sentence, which read: "Cannot something be done to encourage the production of more home-grown alfalfa seed?" I had very naturally given the same matter some thought and attention, and it occurred to me that you might be interested in what we did. I decided some time ago that the production of alfalfa in Alberta was largely a matter of educating the alfalfa grower, and this could best be done by making some effort to produce seed in different parts of the province. Wherever we have irrigation we have no difficulty whatever in growing splendid crops of alfalfa, and there are probably about twenty thousand acres under this crop in Alberta at the present time. However, we find more trouble with it as a dry land crop, and while we have grown it with more or less success on all our Demonstration farms, the difficulty in getting seed suited to all parts of our province was a very great one and I decided if we could get a number of the boys who were attending our three Schools of Agriculture to begin growing alfalfa for seed, that from these three centres we would soon have seed available for the whole province.

PLAN OUTLINED

In January of 1915 I decided to have some plan organized in these three schools for a competition in the production of the best bushel of alfalfa seed. One day in the following month of February, Mr. S. W. Hess, of Calgary, who is general manager of the Atlas Lumber Company, a company that has lumber yards in a good many Alberta towns, called at my office and said he had just dropped in to say that he was interested in what our Department of Agriculture was doing throughout the province, and that his company was naturally interested in the improvement and progress of agriculture, and he had called to say that he would be glad of any suggestion from me as to how the company could be of any assistance to the department. I do not think I hesitated a minute, but replied: "Give me a cheque for \$50 and induce two other lumber companies to do the same, and we will offer prizes of \$25, \$15 and \$10 for the production of the best bushel of alfalfa seed by the boys at each of our three Schools of Agriculture." I briefly outlined to him my plan and the value of having the boys produce the seed, and what it would mean in the spread of this great fodder crop over the province. Mr. Hess did not hesitate either, but replied that this was just what he came to find out. He said I should have the cheque from the Atlas Lumber Company and he was quite confident he could also secure the other two.

On February 27th I received a letter from Mr. Hess, enclosing a cheque from the Atlas Lumber Company for \$50 and the same mail brought a letter from Mr. E. T. Critchley, general manager of the Crown Lumber Company, also enclosing a cheque for \$50. Mr. Hess specified that the Atlas cheque should go to the Olds School, and Mr. Critchley sent his for the Claresholm School. Six days later, on March 5th, I received a letter from Mr. G. E. Hayward, manager of the Hayward Lumber Company, enclosing a cheque for \$50 for the Vermilion School.

DONATES THE SEED

Instructions were immediately sent to the Principals of the three schools to arrange for the competition among the students, the alfalfa to be sown in the spring of 1915, and the seed to be harvested this year, 1916. We also decided to furnish the boys with Alberta grown seed to begin with, as a good deal of seed has been grown on the irrigation lands at Lethbridge and near Medicine Hat. We communicated with Mr. W. A. McGregor, of Medicine Hat, who has been the most extensive grower of alfalfa seed in the province. Now Mr. McGregor, who, by the way, is a son of J. D. McGregor, the noted Angus breeder, of Brandon, Man., seemed inclined to reverse the motto of his famous forbear, Rob Roy MacGregor, whose motto was: "For they shall take who have the power and they may keep who can," and he very generously came back with an offer, to help along the good work of spreading alfalfa over the province, by giving all the boys who entered the competition, at all three schools, a supply of Alberta grown seed free of charge. You can easily see what an added stimulus this was to the plan. Some fifty boys from the three schools entered the competition and this year will harvest their seed. The Instructor in Field Husbandry from each of the schools visited these boys last year to give them help and instruction regarding the seeding of their crop and will visit them again this year with regard to the harvesting of it.

The result of this competition has been to arouse an added interest in the growing of alfalfa in 50 neighbourhoods covering a great part of the province. The companies who gave the prizes have also taken quite an interest in the competition, and Mr. Hess informed me recently that he hoped to visit some of the boys alone without Field Husbandry Instructor this year, and so well are they convinced of the value of the competition that they have repeated the prize money for another competition, beginning this year and concluding in 1917, which gives our freshman class a chance to get into the alfalfa game this spring. This means another group, or rather three groups, more of alfalfa growers beginning next month. This not only means the growing of alfalfa, but it means a great deal to the boy who is in this way putting into practice on his father's farm some of the things he has learned at the School of Agriculture. The working out of schemes such as this is the foundation of a useful system of training boys to farm.

What we are doing in alfalfa we are doing in many other lines, but because our scheme was so much in line with your editorial I felt constrained to pass the few remarks on to you. I frequently wish I had the time to make comments, large as for my own benefit and information, upon many of the articles I see in the eight or ten agricultural papers I read religiously, as often as they are published, but one thing seems to crowd upon another so rapidly these days and each month seems so much shorter than its predecessor that I rarely have time to indulge myself in anything so akin to pleasure or recreation, that is, if writing be as real a pleasure as I find in reading agricultural journals.

William Pearce, in a resolution, urged the Dominion Government and the province of British Columbia to continue without interruption the work of gauging streams, and the following letters from F. H. Peters, Commissioner of Irrigation, Dominion Government, and William R. Ross, Minister of Lands for British Columbia, assure us that sufficient appropriations have been made to continue the very important work.

CALGARY, Alberta, May 10, 1916.

DEAR MR. RANKIN,—I have your letter of May 5th, in connection with the carrying on the work of stream measurement by the Irrigation Branch of the Department of the Interior.

I am very pleased to be able to state that a sufficient appropriation has been made to the branch, and that the stream measurements will be continued without interruption during the year 1916.

Yours very truly,
F. H. PETERS,
Commissioner of Irrigation.

N. S. RANKIN, Esq.,
Western Canada Irrigation Association,
P.O. Box 1317,
Calgary, Alberta.

VICTORIA, May 22, 1916.

NORMAN S. RANKIN, Esq.,
Secretary, Western Canada Irrigation Association,
P.O. Box 1317,
Calgary, Alberta.

DEAR MR. RANKIN,—I beg to acknowledge the receipt of your letter of the 5th May, file 57, in which you refer to a copy of a resolution passed at the Bassano convention on November 23rd last, regarding the continuance of gauging streams.

In this connection I might state that the B.C. Hydrographic Survey has charge of a greater part of the stream gauging, but so far as I am aware all our stations will be continued, with a few exceptions, where, on account of local conditions it has been found impracticable to continue them.

Yours very truly,
WM. R. ROSS,
Minister of Lands.

EXHIBITION OF SOIL PRODUCTS

For the first time in the history of the association, an Exhibition of Soil Products (both irrigated and non-irrigated) was held simultaneously with the convention at Bassano, bringing entries from as far east as Rosthern, Saskatchewan, and as far west as Notch Hill, British Columbia. Some twenty-nine classes produced a keen competition on the part of the farmers, and as will be seen from the prize list below, the honours were pretty fairly divided between the three provinces.

The association is indebted to the Agricultural Branch of the Department of Natural Resources, Canadian Pacific Railway, to Mr. George Lane, The Crowfoot Farming Company (C. W. Peterson) and Dominion Farming Company (F. W. Crandall) for donations in cash towards the prize list and expenses of this exhibition, and to the town of Bassano for the free use of the exhibition hall.

LIST OF PRIZES

All exhibits must have been grown or produced in Western Canada by the exhibitor himself during the season of 1915. Entries must be made with R. A. Travis, Secretary, or B. T. Gray, Chairman, Exhibits Committee, Local Board of Control, Bassano, not later than November 22nd. No entry fee required.

NOTE: All bunches or sheaves of hay and grain must be full six inches in diameter at smallest point.

Prize List
FOR
EXHIBITION OF
SOIL PRODUCTS

(Irrigated and Non-Irrigated)

To Be Held In Connection With
WESTERN CANADA
IRRIGATION
CONVENTION



BASSANO
NOVEMBER 23-24-25, 1915

Class

1. Honour display by a Government, Corporation or District. Exhibits may also include articles produced or manufactured in the district represented.

PRIZE WINNERS

ALFALFA

2. Best sheaf. To be judged for hay. Quality of stalks, leafiness and colour to be considered—as well as size of plant, the latter being an indication of probable yield.

1st—J. E. Robinson, Bassano Colony, Alta.	\$15.00
2nd—W. R. Abbott, Maple Creek, Sask.	10.00
3rd—Seager Wheeler, Rosthern, Sask.	5.00
3. Best six-inch bundle of alfalfa (tallest).

1st—W. R. Abbott, Maple Creek, Sask.	5.00
2nd—	2.50
24. Best peck of alfalfa seed.

1st—W. J. Phillips, Brooks, Alta.	10.00
2nd—	5.00

TIMOTHY

5. Best six-inch bundle—quality and value for hay being the chief consideration.

1st—W. R. Abbott, Maple Creek, Sask.	\$ 5.00
2nd—	2.50

WESTERN RYE GRASS

6. Best six-inch bundle.

1st—W. R. Abbott, Maple Creek, Sask.	\$ 5.00
2nd—W. E. Smith, Revelstoke, B.C.	2.00

PEAS

15. Best six-inch bundle (value for forage).

1st—Seager Wheeler, Rosthern, Sask.	\$ 5.00
2nd—	2.50

BROME GRASS

8. Best six-inch bundle (value for forage).

1st—W. R. Abbott, Maple Creek, Sask.	\$ 5.00
2nd—W. E. Smith, Revelstoke, B.C.	2.50

RED CLOVER

7. Best six-inch bundle.

1st—W. E. Smith, Revelstoke, B.C.	\$ 5.00
2nd—Seager Wheeler, Rosthern, Sask.	2.50

WINTER RYE

9. Best six-inch bundle.

1st—W. E. Smith, Revelstoke, B.C.	\$ 5.00
2nd—	2.50

HARD WINTER WHEAT

Class

10. Best six-inch sheaf.	
1st—Seager Wheeler, Rosthern, Sask.	\$5.00
2nd—	2.50
25. Best bushel threshed grain.	
1st—	7.50
2nd—	5.00

HARD SPRING WHEAT

11. Best six-inch sheaf.	
1st—Seager Wheeler, Rosthern, Sask.	\$ 5.00
2nd—A. S. Culbertson, Bassano, Alta.	2.50
26. Best bushel threshed grain.	
1st—Seager Wheeler, Rosthern, Sask.	7.50
2nd—J. S. Fields, Regina, Sask.	5.00

OATS

12. Best six-inch sheaf.	
1st—R. B. Robson, Crowfoot, Alta.	\$ 5.00
2nd—Seager Wheeler, Rosthern, Sask.	2.50
27. Best bushel threshed grain.	
1st—S. W. Forster & Sons, Nateby, Alta.	7.50
2nd—R. H. Carter, Fort Qu'Appelle, Sask.	5.00

BARLEY

13. Best six-inch sheaf.	
1st—W. R. Abbott, Maple Creek, Sask.	\$ 5.00
2nd—	2.50
28. Best bushel threshed grain.	
1st—John Clark, Crowfoot, Alta.	7.50
2nd—	5.00

CORN

14. (a) Best six ears Field Corn.	
1st—F. A. Taylor, Kelowna, B.C.	\$ 2.50
2nd—S. Unsworth, Maple Creek, Sask.	1.00
(b) Best six ears Sweet Corn.	
1st—	2.50
2nd—	1.00
(c) Best twelve stalks Fodder Corn.	
1st—W. R. Abbott, Maple Creek, Sask.	5.00
2nd—	2.50

FLAX

29. Best peck of Flax Seed.	
1st—R. B. Robson, Crowfoot, Alta.	\$ 7.50
2nd—Giffin Bros., Thompson, Alta.	5.00

POTATOES

Class

20. Best peck of Potatoes.
 1st—Cluny Nurseries, Cluny, Alta. \$ 5.00
 2nd—W. E. Smith, Revelstoke, B.C. 2.50

SUGAR BEETS

16. Best six specimens.
 1st—A. L. Fryberger, Gem P.O., Bassano Colony, Alta. . . . \$ 5.00
 2nd—F. Barnard, Notch Hill, B.C. 2.50

TURNIPS (field roots)

17. Best six specimens.
 1st—C. Rodbourne, Crowfoot, Alta.. . . . \$ 2.50
 2nd— 1.00

ONIONS

18. Best peck of Onions.
 1st— \$ 5.00
 2nd— 2.50

CABBAGE

19. Best three heads.
 1st—C. Rodbourne, Crowfoot, Alta. \$ 2.50
 2nd— 1.00

GARDEN COLLECTION

4. From farmer's own garden. To consist of not less than six different sorts of vegetables. A reasonable quantity of each required.
 1st—John Hamilton, Coaldale, Alta. \$ 7.50
 2nd—Chas. Rodbourne, Crowfoot, Alta. 5.00

PRESERVED FRUITS

21. Best glass jar of preserved or canned homegrown fruit, either cultivated or wild.
 1st—Mrs. H. Pattin, Bassano, Alta. \$ 3.00
 2nd—R. J. Kemp, Hutton, Alta. 2.00

BREAD

22. Best two loaves home-made bread, baked by farmer's wife, sister or daughter.
 1st—No name on entry—U.F.A. Box 247, Strathmore \$ 3.00
 2nd—Mrs. W. S. Pollock, Gem P.O., Alta. 2.00

BUTTER

23. Best home-manufacture by farmer's wife, sister or daughter—2 prints of one pound each.
 1st—Giffin Bros., Thompson, Alta. \$ 3.00
 2nd—A. P. Miller, Gem P.O., Alta. 2.00



ENTRY FORM

Exhibition held in conjunction with the
9th ANNUAL CONVENTION
WESTERN CANADA
IRRIGATION ASSOCIATION

Bassano, Alberta

NOVEMBER, 23, 24 and 25, 1915

ENTRY FREE---All to have equal display space.
No points for display---for quality of exhibits only.

I hereby make the following entries subject to conditions as published :

Class No.

.....

.....

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NAME

ADDRESS.....

To be mailed to

Board of Control, Bassano, Alberta.

R. A. TRAVIS, Local Secretary

TREE PLANTING ON THE PRAIRIES

The attached correspondence regarding the association's campaign to induce settlers on the prairie to plant wind-breaks and shade-trees is self explanatory. I only wish to add the information that through the courtesy of the Dominion Director of Forestry, R. H. Campbell, Ottawa, the Government Chief of Tree Planting Division at Indian Head forwarded me the required number of bulletins which were duly sent out to our prairie mailing list. I am informed by Mr. Don H. Bark, in charge of Irrigation Investigations for the Canadian Pacific Railway, that approximately 100,000 trees were distributed to the settlers.

DEPARTMENT OF THE INTERIOR,
IRRIGATION OFFICE,
CALGARY, Alta., January 11, 1916.

N. S. RANKIN, Esq.,
Western Canada Irrigation Association,
c-o. J. S. Dennis, Assistant to the President,
C.P.R. Company, Montreal, Que.

SIR,—I am writing you this letter on the question of tree plantation as one of the first essentials in the establishment of farm homes on the western prairies, having the understanding from other officials of the association that the present is a particularly opportune time for our association to take some active steps in this connection.

I feel satisfied that I am safe in assuming that perhaps the greatest fault in the colonization of our western prairies has been the lack of the establishment of pleasant homes by the farmers, such homes as by their pleasant aspect and surroundings will constitute in the parents a pleasurable pride, and such as will constitute in the children a feeling that the old home is the nicest place they have ever known—and I further feel safe in stating that any person having a full knowledge of our prairie conditions will not contradict the statement that perhaps foremost amongst the requirements for the making of a pleasant and lovable home is the establishment of tree plantations that will give shelter from the ever present prairie winds, break the endless dull monotony of the landscape on the prairie and provide for the parents and children and the live stock on the farm a patch of shade trees where, during the great heat of our sunny summers, they can have some little rest under the shade and protection of the trees.

Accepting the statements made above I feel that every man interested in the development of our prairies is negligent in an absolutely inexcusable way, who does not realize that the irrigated districts are pre-eminently the places where trees should be grown about the homes because it is a well understood fact that while the growing of a tree plantation is a matter of considerable difficulty and expense on dry farms, that many of our native or imported trees will flourish and grow luxuriously without any question of a failure where irrigation water is available.

Looking for precedent in this matter I would quote that the Mormons of the United States, who are the oldest irrigators in America have followed the practice from the very commencement of their organization and almost as a matter of religion have always from the very outset of all their colonization carried on a very liberal plantation of trees.

The thought occurs to me that this association might properly point out to the officials of the Canadian Pacific Railway Company, who are the greatest colonizers in the Canadian West, of the great, and to my mind inexcusable, lack of tree plantation in their large irrigation block lying to the east of the city of Calgary, and if it be not improper on our part to do so, we might suggest to them as a matter

of self interest the almost immeasurable advertizing value that the tree plantation would have for the promotion of their irrigation colonization schemes and the creation of real homes therein.

I was immensely struck on a trip which I took a year or two ago through the irrigated portions of the state of Utah, by the fact that in travelling on the train through this hot and dusty desert one could always look out of the train window from time to time and the first view and only view that could be had at a distance of the irrigation towns was an immense grove of so-called Mormon poplars, and the impression that these tree plantations made upon the mind of the traveller was very great and lasting. On the contrary while travelling on the Canadian Pacific Railway line through the Western Section I have time and again been questioned by interested travellers to know when we were coming to this much advertized irrigation block, and it is always the case that unless this traveller is quick enough to catch sight of the irrigation ditch or the large sign board that is erected just east of Calgary, there is absolutely nothing to indicate that he is travelling through an irrigated block, and think what an impression would be made upon the traveller's mind if the fact that he was in the irrigation block could be brought home to him in the most striking manner possible by the view of some tree plantations which would immediately catch the eye. I am satisfied that this idea is correct because since the policy has been adopted of replacing the old fence snow guard with the little tree plantations I have always noted that these little plantations have attracted more attention from the travellers than even the great grain fields seen at their best, because after a time the sight of the grain fields begin to pall and the sight of the green trees never does on the prairie.

This question is, I am fully satisfied, one of the big questions that have to be faced in our colonization, and I feel that it is worthy of most full consideration. The question is too big a one to endeavour to deal with in any detail in a communication of this kind, but I trust that in a broad way I have placed the facts before you and I believe the matter is worthy of your fullest efforts along such lines as you may think are the most desirable.

Your obedient servant,

F. H. PETERS,
Chairman, Executive Committee

CANADIAN PACIFIC RAILWAY COMPANY,
DEPARTMENT OF NATURAL RESOURCES,
CALGARY, Alta., February 8, 1916.

NORMAN S. RANKIN, Esq.,
Secretary, Western Canada Irrigation Association,
Calgary, Alberta.

DEAR SIR,—I have noted Mr. Peter's letter of the 11th ultimo.

I am heartily in sympathy with the tree-planting programme advocated by Mr. Peters, and you might advise him that this year we have secured an appropriation of \$4,000.00 to be expended in encouraging the growth of trees by the settlers in our irrigation block, and we also intend to do considerable tree planting along our ditches and at our Operating Headquarters.

Yours very truly,

J. S. DENNIS,
Assistant to the President, C.P.R.

February 11, 1916.

File No. 61—NSR-A.

TO THE EXECUTIVE,
WESTERN CANADA IRRIGATION ASSOCIATION,

DEAR SIR,—Early in January Mr. Peters, in a letter, pointed out that one of the first essentials in the establishment of farm homes on the Western prairies in the irrigated districts was tree plantations and that this association might very properly point out to the officials of the Canadian Pacific Railway, who are the greatest colonizers in the Canadian West, the great and inexcusable lack of tree plantations in their irrigation block east of Calgary. Accordingly I took the matter up with our Honorary Vice-President, Mr. J. S. Dennis, who is in charge of the Company's irrigation interests. I am to-day in receipt of a letter from him expressing his hearty sympathy with the tree planting programme advocated and stating that he has set aside an appropriation of \$4,000.00 to be expended for this purpose. After discussing the matter with Mr. Peters we thought it would be an opportune time for this association to issue a memorandum to settlers on irrigable farms pointing out to them the benefits which would accrue from planting trees on their holdings and that the trees would now be available to them through the Canadian Pacific Railway Department of Natural Resources. Will you please let me have your views upon this matter as in the event that the Executive approve we would like to get out a circular and proceed actively with a campaign to induce the settlers to plant trees.

Yours very truly,

NORMAN S. RANKIN,
Secretary.

April 6, 1916.

File No. 61—NSR-A.

NORMAN ROSS, ESQ.,
Chief of Tree Planting Division,
Government Farm,
Indian Head, Sask.

DEAR SIR,—In a letter received this morning from Mr. Campbell, Director of Forestry, to whom I wrote for a supply of tree planting bulletins for distribution to the irrigation farmers in this province and Saskatchewan, he suggests that I furnish you with a list of names and addresses to whom I propose sending these bulletins so that you may check them over and return it to me, striking off the list those to whom your records show these bulletins have already been sent. I will appreciate you doing this at your earliest convenience.

Yours very truly,

NORMAN S. RANKIN,
Secretary.

DEPARTMENT OF THE INTERIOR
CANADA

R. H. CAMPBELL, Director of Forestry, Ottawa, Ont.
NORMAN M. ROSS, Chief of Tree Planting Division,
Indian Head, Sask.

FORESTRY BRANCH, Nursery Station,
INDIAN HEAD, Sask., April 8, 1916

N. S. RANKIN, Esq.,
Western Canada Irrigation Association,
Box 1317, Calgary, Alta.

DEAR SIR,—I am in receipt of yours of the 6th inst., File No. 61, enclosing the list of farmers to whom you wish to have tree bulletins sent. We will check over the list with our files and will mark those who have already received our bulletins. A list of those who have not yet received our bulletins will then be sent to our office at Ottawa and bulletins will be forwarded directly to them from there.

Your obedient servant,

NORMAN M. ROSS,
Chief of Tree Planting Division

April 12, 1916.
File No. 61—NSR-A

TO THE EXECUTIVE,
WESTERN CANADA IRRIGATION ASSOCIATION.

DEAR Sir,—In furtherance of my letter to you of February last, in which Mr. Peters pointed out the regrettable lack of tree plantations in the irrigated districts, I have to advise that the Canadian Pacific Railway, through its Forestry and Irrigation Departments, are already in touch with the settlers in these districts and are making delivery of trees, as you will note from the attached newspaper clipping.

In reply to my letter, the Honourable W. J. Roche, Minister of the Interior, advised that the Forestry Branch had for years been urging upon the settlers in the prairie provinces the desirability of planting shelter belts and tree plantations, and had supplied millions of trees free of cost, and went on to say that if we would encourage the growth of these plantations, it would bring about as nothing else would a distinction between irrigated and non-irrigated lands and in the end be a most profitable undertaking.

I found that the Forestry Branch of the Dominion Government had issued a bulletin (No. 1) on "Tree Planting on the Prairies" and a circular (No. 5) on "Planting a Tree Plantation for a Prairie Homestead," and on writing to Mr. Campbell was offered a supply for free distribution.

With Mr. Peters' help, I have compiled a list of all settlers in the irrigated districts of Alberta and Saskatchewan, which I have forwarded to Mr. Norman Ross, Chief of the Tree Planting Division of the Government at Indian Head, Saskatchewan, who offers to send these bulletins and circulars direct to each name on our list.

I have the honour to be, sir,

Yours very truly,

NORMAN S. RANKIN, Secretary

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS
EXPERIMENTAL STATION FOR SOUTHERN ALBERTA.

LETHBRIDGE, Alberta, May 27, 1916.

NORMAN S. RANKIN, ESQ.,
Secretary, Western Canada Irrigation Association,
Calgary, Alberta.

DEAR MR. RANKIN,—In reply to your letter of the 9th inst., File No. 61, in which you were good enough to enclose a copy of the minutes of the Executive meeting held recently at Field, I may say that I have given the matter referred to regarding the most satisfactory tree for general use in the irrigated areas on our prairies, a good deal of consideration.

For shelter belts mixed planting should always be practised where possible. Among the trees suitable for this purpose would be included the native cottonwood, elm, ash (providing the last two are propagated from seeds collected in the Canadian North-West, for seeds collected in the northern states of the same varieties are not always satisfactory), willows and Manitoba maples. The last kind is used more particularly for a cover crop. Our experience has been that Manitoba maples are not very satisfactory to plant by themselves in irrigated districts in southern Alberta because the irrigation is apt to cause too much late growth, making the wood so sappy when it goes into the winter that it will not stand the heavy drying warm winds the latter part of the winter and in the early spring.

The best kind of tree to plant where but one sort is used in the irrigated districts along the banks of small ditches in southern Alberta, is undoubtedly the native cottonwood. This tree is found in the irrigated districts in the Rocky Mountain region from the Canadian border right down into Mexico. The peculiar adaptability of this tree for such a purpose is that it thrives in wet places but still will stand long periods of drought without serious setback. It grows rapidly, which is a characteristic that all kinds of trees planted in new districts on the prairies should have, it has a fairly good length of life and is reasonably free from insect pests and fungus diseases.

The native cottonwood is not found on the Belly river much above the city of Lethbridge and on the Bow river it pinches off somewhere between the junction of that river with the Belly and the city of Calgary as it is not found in the natural state in the vicinity of Calgary. In my judgment commercial nurseries in the province should make a point of propagating from this native tree, for on the Experimental station we have found that trees of this same variety when brought in from Dakota are not perfectly hardy. In fact this past winter we have had some large Dakota cottonwoods killed back while the native ones are alive and vigorous up to their tips.

It seems to me that the Western Canada Irrigation Association could accomplish much good by encouraging the general planting of the native cottonwood around buildings, along the edges of fields, and on the banks of smaller ditches where they will not be an inconvenience to field operations, for they will grow rapidly and will soon change the general aspect of the landscape in the irrigated localities. In the shelter afforded by these trees it will be possible to raise fruit trees, etc.

At the same time that the cottonwoods are being planted a good utility tree such as the ash could be planted. The ash grows very much slower and although it lacks many of the advantages that the cottonwood possesses, still it is a tree that produces wood of much more value which eventually will be a point to be considered.

Very sincerely,

W. H. FAIRFIELD,
Superintendent.

FOURTH ANNUAL CONVENTION, CYPRESS HILLS WATER USERS' ASSOCIATION

The Fourth Annual Convention of the Cypress Hills Water Users' Association was held at Maple Creek on June 5th, there being a fair attendance, the delegate being called to the meeting by post card. The convention consisted of two sessions morning and afternoon, the evening meeting being merged with that of the Live Stock Association.

The weather was bad and roads almost impassable.

Deputy Minister Craig of the Department of Agriculture; A. S. Dawson, Chief Engineer, Department of Natural Resources, Canadian Pacific Railway; F. H. Peters, Commissioner of Irrigation and R. S. Stockton, Superintendent of Operation and Maintenance, Western Section, Canadian Pacific Railway Irrigation Block represented this association. All addressed the meeting. Acting Deputy Minister Auld of Saskatchewan attended and made a brief address in the evening. T. A. Hargrave, President, occupied the Chair.

F. H. Peters spoke on the necessity of reservoir construction; A. S. Dawson "The Basis of successful irrigation enterprise is the small project"; R. S. Stockton "Hints for Irrigators"; and H. A. Craig on "Irrigation and Live Stock." Mr. Peters outlined plans whereby the association could float debentures to raise the cost of the work of reservoir building, stating that the Government would do all possible in the selection of proper sites, indeed had already made several surveys toward this end.

The place of meeting for the 1917 gathering of the Western Canada Irrigation Association came in for considerable discussion, and it was decided to invite the convention to come to Maple Creek. Maple Creek had never yet had the honor of entertaining this gathering, and now that the conventions were upon a strict business basis, it was felt that the town could fittingly extend invitation for the 1917 congress. A delegation headed by Hon. President D. J. Wylie, M.L.A., was nominated to attend the Kamloops convention and put forward strongly the claim of Maple Creek in this connection.

The following slate was elected for the ensuing year:

President:	-	GEORGE STEWART, Maple Creek.
First Vice-President:		I. H. WILLIAMS.
Second Vice-President		W. A. BURTON.
Secretary-Treasurer		G. S. HERRINGER, re-elected.
Executive:	-	L. E. RICHARDSON, D. KEARNS, J. STEWART, A. S. UNSWORTH, D. DRINAN, J. M. SPANGLER, C. ARMSTRONG, C. PEARSE, W. BABBINGTON.

INTERNATIONAL IRRIGATION CONGRESS

There has been no meeting of this body since our last convention at Bassett in November, though preparations are under way to hold the twenty-third session at El Paso, Texas, in September.

In a letter, dated July 13th, written by Secretary Hooker to Calgary, he says:

"At present things are moving along normally here but the Mexican situation grows more intense as time passes, and I fear that it is only a question of time before there is serious trouble. However, we are hoping for the best.

"Although definite dates for the Irrigation Congress have not yet been set, the meeting will undoubtedly be held some time between the 10th and 20th October. You will be interested to know that President Wilson has set aside a week, free from other engagements, to come out and dedicate the Elephant Butte Dam, if public affairs at that time permit. It is needless to say that we are looking forward to a great meeting and hope that you and a good delegation from Canada will be able to attend."

A full report on the 22nd International Irrigation Congress, held in California, will be found in our last annual report.

SIXTH ANNUAL MEETING, OREGON IRRIGATION CONGRESS, PORTLAND, OREGON

No invitation this year was sent to us by the Oregon Irrigation Congress, and no delegation, therefore, attended. I understand that this meeting was purely a business one, affecting state matters only, which is doubtless the reason of our lack of invitation. Delegations from this association have attended the Oregon Irrigation Congresses for the past two years.

PUBLICITY SECURED

The following addresses were placed during the year with papers and magazines through the West, as well as many small newspaper items and articles too numerous to detail.

Special Articles:

"Domestic Science Training for Farm Girls," by Miss Marjorie M. Goldie, Campbell's Scientific Farmer, Billings, Montana.

"Grading up a Dairy Herd," by G. H. Hutton, Saskatchewan Farmer, Moosejaw, Saskatchewan.

Address by the Honourable Duncan Marshall, Farmers' Magazine, Toronto.

"Agricultural Education in Alberta," by Dean Howes, Canadian Countryman, Toronto.

Address by G. R. Marnoch, President, Lethbridge Board of Trade, Grain Growers' Guide, Winnipeg.

"Growing of Alfalfa in Alberta," by Don H. Bark, Farmers' Advocate and Home Journal, Winnipeg.

"Alfalfa," by Don H. Bark, Farm and Ranch Review, Calgary.

"The Work of the Western Canada Irrigation Association," by F. H. Peters, Farm and Ranch Review, Calgary.

"Wise Men No Longer Pray, etc.," Fruit and Farm, Vancouver, illustrated, and with 280 papers (Patent insides) in Saskatchewan and Alberta. 500 words. (Exhibit attached.)

"Kamloops, The Place in the Sun," Farm and Ranch Review, Calgary, and Kamloops Standard-Sentinel, Kamloops, B.C.

"The Convention City," Western Standard, Calgary.

General Publicity:

We are indebted to the Kamloops Board of Trade for the loan of 15 cuts illustrating the city and vicinity, which have been used in advertising the convention.

Thirty cuts were made for publicity purposes and have been running for the past two months in the British Columbia, Alberta and Saskatchewan papers.

The following papers regularly carried our publicity matter:

The Journal, Ashcroft, B.C. (weekly).
 The Advertiser, Armstrong, B.C. (weekly).
 The Mail, Bassano, Alberta (weekly).
 The Bulletin, Brooks, Alberta (weekly).
 The Review, Creston, B.C. (weekly).
 The Call, Gleichen, Alberta (weekly).
 The Standard, Kamloops, B.C. (semi-weekly).
 Orchard City Record, Kelowna, B.C. (weekly).
 The Sentinel, Kamloops, B.C. (daily).
 Courier and Okanagan Orchard, Kelowna, B.C. (weekly).
 The News, Nelson, B.C. (daily).
 The Herald, Penticton, B.C. (weekly).
 The Mail-Herald, Revelstoke, B.C. (semi-weekly).
 The Observer, Salmon Arm, B.C. (weekly).
 The Standard, Strathmore, Alberta (weekly).
 The Review, Summerland, B.C. (weekly).
 The News, Vernon, B.C. (weekly).
 Fruit and Farm, Vancouver, B.C. (monthly).

MINUTES OF THE EXECUTIVE MEETING OF THE WESTERN CANADA IRRIGATION
 ASSOCIATION HELD AT FIELD, B.C., SATURDAY, APRIL 29TH, 1916

A meeting of the Executive was held on Saturday, 11 a.m., April 29th, 1916.
 Present:

F. H. Peters, in the Chair.
 G. R. Marnoch, Lethbridge.
 R. A. Travis, Bassano.
 Jas. Johnstone, Nelson.
 J. L. Brown, Kamloops.
 The Secretary.

Letters of regret at inability to attend were received from F. Maurice Smith, Penticton and W. E. Scott, Victoria.

The Secretary read the minutes of the last two meetings held at Bassano November 23rd and 25th last, which were approved. The minutes of the meeting held at Bassano, November 23rd, should have been signed by William Pearce, Chairman 1914-1915, but in his absence in Ottawa and in view of the fact that two of the members at that meeting were present at Field, at the request of the Secretary and with the approval of the meeting, Chairman Peters signed them upon motion of Mr. Johnstone, seconded by Mr. Brown.

The Secretary outlined his visit the previous month to Kamloops and the formation of a Local Board of Control there with J. L. Brown as Chairman and C. Lawrence as Secretary. He went over the tentative programme of speakers as drawn up at the time of this visit with the help of Secretary Winslow of the B.C. Fr

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Provincial Buildings, Kamloops, B.C.



Vernon Road, Kamloops, B.C.
Good roads — Quick transportation

Growers' Association, who had kindly come to Kamloops for this purpose at request. Of 22 speakers suggested at that meeting and written to by the Secretary, 14 acceptances had been received—no refusals. The Secretary reported he had again written the balance a day or two before and would follow them up for a definite reply. Mr.

The proposed papers on "Sugar Beets as a Commercial Enterprise in Alberta" by Mr. Fryberger of the Bassano Colony and "Sugar Beets as a Commercial Enterprise in British Columbia," by P. H. Moore, Superintendent of the Dominion Experimental Farm at Agassiz, B.C., led to discussion. It was the consensus of opinion at the meeting that the title "Sugar Beets as a Commercial Enterprise in British Columbia" should be changed to read "Can Sugar Beet Growing be made a Commercial Success?" and that it would be better for Mr. Fryberger to deal with "Varieties of Crops Successfully grown under Irrigation in the Bassano Colony" and that the choice of the speaker to deal with the sugar beet proposition in Alberta be left with Mr. Marnoch and the Secretary. It was thought desirable, however, that the very fullest possible discussion should be brought out in this connection so that intending beet growers would have every possible data at their hands. The help them to decide whether or not to go ahead with such a proposition.

Mr. C. E. Barnes, General Manager of the Barnes estate at Walhachin, B.C., having left for Europe, Mr. Brown was asked to get into touch with a man in the district who could best handle the subject of "The Operation of Irrigation Systems" and report to the Secretary, who would then extend the official invitation.

After a discussion of the proposed address by D. W. Strachan, Superintendent of the Sanitarium (Alexandra Ranch), Tranquille, B.C., where the convention proposes to put in one afternoon of practical inspection, it was suggested by the Secretary that Mr. Strachan read his paper while the delegates are visiting the ranch rather than in the convention hall before the visit is made. The Secretary was instructed to write to Messrs. Brown and Strachan suggesting this.

After discussion as to the subject of Mr. Peters' address, it was agreed that he should speak on "Irrigation Districts' Acts."

Mr. Marnoch was asked to speak on the relation of interest between the city and the country man, the suggested title being "The Farmer and the City Man." Mr. Marnoch asked that Mr. F. M. Black's name be coupled with his in this address, the time to be split between them.

The Official Call as proposed by the Secretary, including illustrations, lay-out, etc., was laid before the meeting and approved.

A sample badge to be worn by delegates to the convention was displayed and approved. This design was the choice of the Kamloops meeting of the month previous and is similar in shape and size to that used at Bassano last year.

New letterheads and envelopes were approved.

The designs for follow-up post cards were approved.

Mr. Brown asked if it would not be possible to issue the annual reports at an earlier date. The Secretary informed the meeting that copy for these reports read by the Superintendent of Irrigation at Ottawa in correct typewritten form ready for printers. Mr. Peters informed the meeting that everything possible was done by the department at Ottawa to secure an early issue of these reports and pointed out that they generally came off the press prior to the month of March when the convention

were held during the summer, but that last year the convention was held at the close of November and, therefore, the issue could not be expected much before the summer.

The Secretary submitted the financial statement showing a balance on hand on March 1st of \$66.63, with \$1,500.00 in grants promised. He presented his accounts and asked that they be audited. Chairman Peters reported to the meeting that he checked the monthly bank statement with the Secretary's statement each month and signed all cheques with the Secretary, and in his opinion such an audit was not necessary. It was moved by Mr. Marnoch and seconded by Mr. Brown that the financial statement as presented be accepted.

The Secretary presented an estimated statement of expenses for the Kamloops convention of \$1,070.80, these figures including the grant of \$500.00 to the Kamloops Local Board of Control. Mr. Brown did not think that \$500.00 would be sufficient for their purposes and stated that the city had approached the British Columbia Government for a further grant. Mr. Brown stated that when the convention was held there in 1910 the Government had granted them \$2,000.00 for this purpose. The meeting adjourned at 12.30 p.m. for lunch, resuming session at 2 o'clock.

The Secretary presented his statement of publicity matter issued during the past few months.

The status of the association's movement to induce tree planting on the prairies was explained. A list containing 1,000 names of irrigators in Southern Alberta and the Cypress hills, had been furnished the Chief of the Division of Tree Planting, Mr. Norman Ross, Indian Head, at his request. This list had been returned, after being checked over, with the information that 180 names only on such list had received the Government's tree planting bulletins and that Mr. Ross would write the Director of Forestry at Ottawa for permission to forward to Calgary 820 bulletins to be issued to the balance of the names on the association's list. Mr. Johnstone pointed out that what was wanted was a utility tree such as an ash and suggested that Mr. Fairfield be communicated with regarding the matter.

The Secretary read the Notice of Amendment under Article VII., Clauses 9 and 17, the amendment providing representation for the Comptroller of Water Rights of British Columbia, one delegate from the Water Rights Branch of the Department of Lands, British Columbia, the Chief Engineer of the British Columbia Hydrographic Surveys, the Dominion Superintendent of Irrigation and the Dominion Superintendent of Water Powers.

The matter of the payment of expenses of Executive members to the annual conventions was brought up by Mr. Johnstone, who was under the impression that this had been done previously. It was explained by the Chairman that while the expenses of the Executive to Executive meetings had been met whenever funds permitted, it had never been the custom to pay the expenses of the Executive to the annual conventions. Mr. Johnstone stated that he raised the question to be properly informed regarding it, and that he was satisfied to let the matter stand.

It was moved by Mr. Brown and seconded by Mr. Johnstone that the Secretary and Chairman be instructed to approach the proper Canadian Pacific Railway officials with a view to securing permission for delegates to the Kamloops convention to return eastwards via the alternative Canadian Pacific Railway route (Revelstoke, Nelson and the Crow). Carried.

The status of the five resolutions passed at the recent convention was discussed.

Resolution No. 1. Mr. Peters reported that the work of irrigation survey in Southern Alberta was being prosecuted as actively as possible.

Resolution No. 3, the continuance of gauging streams. Mr. Peters reported that this work was being carried on without any delay.

Resolution No. 4, the International Irrigation Congress at El Paso, Texas. The Secretary advised the meeting that he had no communication whatever from Mr. Hooker and was instructed to write and ask Mr. Hooker to place this association on his mailing list so that we might be informed of the work of the International Irrigation Congress as fully as possible.

Discussion ensued regarding the settlement of the irrigation dispute between the farmers in the Canadian Pacific Railway Irrigation Block, Western Section and the Canadian Pacific Railway, and a suggestion was made that a resolution be drawn up expressing the satisfaction of this association with such settlement. Mr. Marnoch suggested that this be left over until the Kamloops convention. Mr. Johnstone stated that in talking with the late President Speakman of the United Farmers of Alberta, on the way to the convention at Bassano he found that gentleman very strongly prejudiced against the railroad corporation but on his return with him, after the convention, Mr. Speakman's attitude was very much changed. Mr. Brown remarked that if some sort of resolution was put through by this meeting it might induce certain farmers who were hesitating about signing up, to do so, and after further discussion the following resolution proposed by Mr. Marnoch and seconded by Mr. Brown, was unanimously carried.

"That the Executive of the Western Canada Irrigation Association in session at Field, B.C., April 29th, is glad to learn that since the very full discussion at the 9th annual convention of this association held at Bassano, last November, of the difference between the irrigation farmers in the Gleichen district and the Canadian Pacific Railway, a better understanding has been brought about through the good offices of President H. W. Wood of the United Farmers of Alberta and President F. M. Black of the Calgary Board of Trade."

The Secretary was instructed to send copies to Presidents Wood and Black.

There being no further business the meeting adjourned after a hearty vote of thanks to the Chairman.

NORMAN S. RANKIN,
Secretary

In accordance with Article X. notice of motion of the following proposed amendments will be moved at this annual convention.

1. To add after paragraph 9, Article VII., Section 1, two new clauses hereunder:

"The Comptroller of Water Rights of British Columbia and one delegate from the Water Rights Branch of the Department of Lands."

"The Chief Engineer of the British Columbia Hydrographic Surveys."

so that this paragraph will now read as follows:

"The Dominion Commissioner of Irrigation and two delegates, one from the Irrigation Branch and one from the Hydrographic Surveys Branch of the Irrigation Department.

The Comptroller of Water Rights of British Columbia and one delegate from the Water Rights Branch of the Department of Lands.

The Chief Engineer of the British Columbia Hydrographic Surveys."

2. To add to paragraph 17, Article VII., Section 1, the words

"The Dominion Superintendent of Irrigation and the Dominion Superintendent of Water Powers," so that this paragraph will now read:

"The Dominion Superintendent of Irrigation, the Dominion Superintendent of Forestry, the Dominion Superintendent of Water Powers, and the Chief Forester of British Columbia."

This motion was included in the "Official Call" and was received by the Secretary more than a month prior to the date of this convention. It is, therefore, in order for discussion before this meeting.

GOVERNMENT GRANTS

The association is indebted to the Dominion Government for a renewal of their grant of \$500.00 and to the Alberta and British Columbia Governments for like amounts, and as this convention is being run on the most economical basis possible, your Executive trusts to come through the season with a financial balance on the right side. Below is a statement of the cost of the Bassano convention, which of course, does not include working expenses for the period between conventions, stamps, Executive meeting at Field, etc., etc.

Transportation, expenses of speakers to convention including Secretary and assistant.	\$ 53.80
Printing, badges, official calls, cuts, photographs, engravings, etc.	373.40
Stenographic report including hotel and expenses.	177.00
Cash awards for agricultural exhibits.	198.00
Printed prize-lists, signs, cartage of exhibits and other details in connection with exhibition.	113.25
TOTAL	\$915.45

The cost of the Kelowna convention in 1912 was \$1,615.95; and of the Lethbridge convention the following year, \$1,514.64.

ESTIMATED COST OF KAMLOOPS IRRIGATION CONVENTION

250 badges (ribbons already in hand)	\$ 20.00
2,500 sheets Certificates of Appointment (three on sheet) . . .	25.00
2,500 official calls, including four cuts.	100.00
Art work.	\$10.00
3 half-tones, 4½" x 5" cuts . .	12.50
2,500 large envelopes (No. 10)	25.00
1,000 small envelopes	7.00
	<hr/>
	\$ 177.00
4 follow-up post cards—2,300 of each	\$ 46.00
Designing and drawing at \$5.00 each	20.00
4 half-tone cuts, 3½" x 5¼" at \$3.20 each	12.80
	<hr/>
	78.80

3,000 letterheads (zinc engraving)	\$ 30.00	
10 cuts for advertising purposes	25.00	
Estimated expenses of two outside speakers at \$80.00 each	160.00	215.00
Kamloops, for local expenses	\$500.00	500.00
Estimated expense of Field meeting	\$100.00	100.00
		<hr/> \$1,070.80

Income:

Alberta Government Grant	\$500.00
Dominion Government Grant	500.00
British Columbia Government Grant	500.00
Balance on hand	66.63

FINANCIAL STATEMENT

WESTERN CANADA IRRIGATION ASSOCIATION, 1915-1916

November 25th, 1915, to July 28th, 1916

Receipts

1915—Balance carried forward as per bank account	\$	710.23
Refund on sleepers used at Bassano convention by C.P.R.		25.00
1916—Grant from the Dominion Government	\$500.00	
Grant from the Alberta Government	500.00	
Grant from the British Columbia Government.	500.00	
		<hr/> 1,500.00

Expenditures

1915—Premium list, Bassano Exhibition	\$208.00	
Lunch expense at Bassano Dam for delegates.	17.00	
Stenographic Report and expenses	177.00	
Cartage and signs, Exhibition, Bassano	13.25	
Expenses Vice-President Dunham, U.F.A. from Leth- bridge to Bassano and return as speaker	11.00	
Expense of sleepers C.P.R., Bassano, during meeting	30.80	
Printing, stationery, etc., local expenses	13.25	
1916—Printing, photos, cuts, badges, post cards, letter heads, official calls, general advertising expenses.	249.80	
Grant to Local Board of Control, Kamloops.	500.00	
Expense executive meeting at Field, B.C., 29-4-'16	39.30	
Secretary's salary	333.28	
Emergency cheque for expenses (working) at Kamloops to be accounted for.	100.00	
Expenses of meeting Permanent Secretary and Local Secretary, July 22nd, for final arrangements convention	14.70	
Miss Allen—Special stenographic work	25.00	
Balance in bank this date	502.85	
	<hr/> \$2,235.23	\$2,235.23

Certified correct,

Calgary, July, 1916.

NORMAN S. RANKIN,
Permanent Secretary

MEMBERS TAKE THE KING'S UNIFORM

The advertising follow-up post card issued by your executive this season stating that "Irrigation produces Patriotism," pretty well hit the mark, as there is no doubt many of our delegates are with the overseas forces. I regret that I have no record of the names of these men, but hope to secure them at a later date; at present I can therefore only make mention of one or two of those who have been most prominent in our work as members of your executive.

W. C. Ricardo, one of the original members of this association and a past President, left for the front early this year, while our past Vice-President, Dr. C. W. Dickson, is enlisted with the 172nd Battalion, quartered in this city at this time. Along with Captain J. C. Dufresne and artilleryman Arthur Chamberlain, of last year's Executive, the association wishes these men "God Speed" and a safe and early return; they have worked actively and enthusiastically in the cause of irrigation, and we shall not quickly forget them. Western Canada cannot afford to lose men of this calibre. They are needed in our irrigation "firing line," where we hope to see them again in the earliest possible future.

DEPARTMENT OF THE INTERIOR

CANADA

IRRIGATION BRANCH

OTTAWA, July 7, 1916.

NORMAN S. RANKIN, ESQ.,
Secretary, Western Canada Irrigation Association,
Calgary, Alberta.

DEAR MR. RANKIN,—I received your telegram of the 6th inst. as follows:

"I hope reports nineteen-fifteen annual meeting Western Canada Irrigation Association will be ready for distribution by time this year's convention at Kamloops, July twenty-fifth to twenty-seventh. If so, please send three hundred copies direct to Kamloops. Very necessary should be available. Please wire answer."

to which I have replied to-day as follows:

"No prospect of report being completed by July twenty-fifth. Progress very unsatisfactory. Regret delay, but cannot hasten delivery. Writing."

I very much regret the unsatisfactory progress that is being made in connection with the printing of the report of the Bassano convention held in November, 1915. The report was received from you very promptly, under the circumstances, and was transmitted by me to the King's Printer, without delay. The subsequent arrangements were, of course, beyond my control. I have done all that I can to expedite the printing and delivery of the report, but fear that we must expect a good deal of delay. I am led to believe that it may be early autumn before the report is finally delivered.

Yours very truly,

E. F. DRAKE,
Superintendent of Irrigation.

DEPARTMENT OF THE INTERIOR
CANADA
IRRIGATION BRANCH

OTTAWA, July 10, 1916

NORMAN S. RANKIN, ESQ.,
Secretary, Western Canada Irrigation Association,
Calgary, Alberta.

DEAR MR. RANKIN,—With further reference to my letter of the 7th inst. I am enclosing, for your information, a copy of a memorandum which I have received from the officer who has charge of departmental printing. You will see from this that I had taken up with him the question of early delivery of this report before the receipt of your telegram of the 6th inst., and you will find his reply which contains my statements to you.

Yours very truly,

E. F. DRAKE,

Superintendent of Irrigation

DEPARTMENT OF THE INTERIOR

OTTAWA, July 8, 1916

Memorandum.

MR. DRAKE,—I have your memorandum of July 4th, asking as to the possibility of getting 500 copies of the report of the Western Canada Irrigation Association delivered at Kamloops by July 25th.

On receipt of your memo., I had the Superintendent of Outside Printing visit the printers and made enquiries as to whether the printers had as yet been delivered the paper stock. After careful consideration, we find it will be impossible to make delivery of any copies for some time to come. We expect that the whole report will be signed for press very shortly, but the big factor in the delay may be the getting the paper stock. War conditions seem to have upset the paper manufacturers to such an extent that it now takes months to get stock that formerly could be secured promptly on short notice.

H. W. LEGGETT

VICTORIA, July 24, 1916

NORMAN S. RANKIN, ESQ.,
Secretary, Western Canada Irrigation Association,
Kamloops.

DEAR MR. RANKIN,—I am very sorry to have to tell you that I find it will be quite impossible for me to be present at the irrigation convention.

The Minister is away, and both Mr. MacDonald and Mr. Winslow, heads of the Live Stock and Horticultural Branches of this department, will be in attendance at the convention. It would not do for me to leave also, as there would be no one left in the office to attend to important matters which are constantly cropping up. I will, therefore, have to forego the pleasure of being present.

I can assure you that it is a very great disappointment to me. I had intended up to the last moment to go, but I consider that as I have attended every meeting of this convention for some years, it would be better if Mr. Winslow and Mr. MacDonald were to have their turn. They will, I am sure, ably represent the department.

I hope that you will have a very successful meeting, and that everything will go off well.

With best regards,

Yours very truly,

WM. E. SCOTT,

Deputy Minister

REGINA, Sask., July 18, 1916.

NORMAN S. RANKIN, ESQ.,
Secretary, Western Canada Irrigation Association,
Calgary, Alta.

DEAR SIR,—With reference to your wire of the 17th inst. reading:

"Trust you will be able to attend Western Canada Irrigation Convention at Kamloops, July twenty-fifth next. If impossible, the Executive will appreciate your sending personal representatives."

I sent a reply message as follows:

"Regret Minister unable attend convention. Will be represented by Deputy Auld."

which I wish to herein confirm.

Mr. Motherwell has engagements in Regina during next week, which will preclude the possibility of his attending your convention, much as he would like to be with you on this occasion. Mr. Auld will reach Kamloops on the morning of the 25th, and will remain for the two final days of the convention.

Yours very truly,

I. J. CUMMINGS,
Secretary.

VICTORIA, B.C., July 25, 1916.

NORMAN S. RANKIN,
Western Canada Irrigation Convention,
Kamloops, B.C.

Owing to important matters in hand, impossible to attend convention.

WILLIAM YOUNG,
Comptroller of Water Rights.

VICTORIA, B.C., July 25, 1916.

NORMAN S. RANKIN,
Secretary, Western Canada Irrigation Association,
Kamloops, B.C.

Regret sincerely that owing to absence of Minister and important matters requiring my attention here, I shall have to forego pleasure of attending convention of Western Canada Irrigation Association. My best wishes for a successful and profitable time. Am sure Local Board of Control will look after delegates well and show them the many attractions and points of interest of Beautiful Thompson valley.

WM. E. SCOTT.

MR. N. S. RANKIN,
P.O. Box 1317,
Calgary, Alta.

SAN FRANCISCO, June 28, 1916.

DEAR SIR,—Your invitation to be present at your association's congress received.

I much regret that I cannot attend. I have already arranged for an extended trip which will occupy all my time from early in July to well into August. Had I known your dates earlier I could have attended.

I wish your convention, and your association, every success.

Yours truly,

NIEL NIELSON,
Commissioner.

NN-ACG.

Australian Trade Commission to America.

VICTORIA, July 19, 1911

NORMAN S. RANKIN, ESQ.,
Secretary, Western Canada Irrigation Association,
Calgary, Alta.

DEAR MR. RANKIN,—I beg to acknowledge the receipt of your telegram under date of the 17th inst., relative to my taking the Chair at the Kamloops convention on the 25th of July.

I regret very much indeed that it will not be possible for me to be with you on the date mentioned, as I am leaving immediately for Prince George and expect to be absent for some time. I have been living in hopes right along that matters might be arranged in such a way as to make it possible for me to attend the convention, and needless to say, I am rather disappointed.

I trust you will convey to the different delegates my deep regrets at not being able to attend, and I hope that the efforts of yourself and associates may result in the most successful convention on record.

Yours very truly,

WM. R. ROSS,
Minister of Lands

NELSON, B.C., July 25, 1911

CHAIRMAN IRRIGATION CONVENTION,
Kamloops, B.C.

Accept best wishes for success of your session. After recent tour through the dry belt am greatly impressed with its immense agricultural possibilities with proper development of irrigation.

WILLIAM MANSON,
Minister of Agriculture

VICTORIA, B.C., July 20th, 1911

NORMAN S. RANKIN,
Secretary, Western Canada Irrigation Association,
Calgary.

Your letter Seventh received. Have made my plans to go to Kamloops, but there have been so many calls upon my time this season that I cannot be certain. Better have an extra speaker available.

WILLIAM YOUNG

PENTICTON, B.C., July 22, 1911

NORMAN S. RANKIN, ESQ.,
Secretary, Western Canada Irrigation Convention,
Kamloops.

DEAR SIR,—I very much regret to say that the claims of my orchard, where I am alone on 20 acres, will prevent my attending the convention. I hoped to have been able to arrange matters so that I could get away this week, but I find it impossible.

Wishing your meeting every success,

I am,

Yours truly,

F. MAURICE SMITH

CALGARY, July 6, 1916.

J. C. STEAD, ESQ.,
Calgary.

DEAR MR. STEAD,—Mr. Norman Rankin was good enough to put me on the list of speakers for the irrigation convention at Kamloops in company with Mr. Arnoc. I demurred at the time as I considered it unlikely that I could be in Kamloops at that time.

Possibly you are looking after Mr. Rankin's work in this direction, and if so, will you please note that I have to leave for the East about the middle of the month and shall most certainly miss the convention at Kamloops. This I regret very much as it is always a pleasure for me to visit British Columbia, but as the excuse is a good one, no doubt you will be able to render it gracefully to the powers that be.

Thanking you in anticipation,

Very truly yours,

F. M. BLACK,
President.

MB-AM.

OTTAWA, July 11, 1916.

C. E. LAWRENCE, ESQ.,
Local Secretary, Convention of Western Canada,
Irrigation Association,
Box 204, Kamloops, B.C.

DEAR SIR,—I have your favour of the 6th inst., inviting me to attend the tenth annual convention of the Western Canada Irrigation Association to be held at Kamloops from the 25th to the 27th inst.

I may say that up to recently I have had this convention in mind and had been hoping that it would have been possible for me to attend. I am very sorry to say, however, that I have since found that circumstances make it impossible for me to be in the West at that time, so I am obliged to defer this anticipated pleasure until another year.

The Superintendents of some of our Branch Farms in the West have been authorized to be present at the convention, and I am sure our Farms will be well represented.

Hoping that there may be a very successful gathering, I am,

Yours very truly,

J. H. GRISDALE,
Director.

EDMONTON, July 9, 1916.

C. E. LAWRENCE, ESQ.

DEAR SIR,—I thank you very much for your kind invitation to attend the convention of the W.C.I.A. I only wish this had been possible, as I am greatly interested in irrigation and have seen something of it in many parts of the world. I greatly regret to say, however, that it is not possible as I am travelling from province to province on a fixed programme, and, in fact, am not my own Master.

Thanking you heartily, and wishing all success to your efforts,

Believe me,

Truly yours,

H. RIDER HAGGARD.

OTTAWA, July 4, 1916

C. E. LAWRENCE, Esq.,
 Secretary, Local Board of Control,
 Western Canada Irrigation Association,
 Kamloops, B.C.

DEAR MR. LAWRENCE,—I have received a copy of the Official Call of Western Canada Irrigation Association issued in connection with the tenth annual convention which is to be held at the city of Kamloops on July 25th and following days.

I hardly expect to be able to attend the convention myself, but I am glad to be able to inform you that Hon. Dr. W. J. Roche, Minister of the Interior, has kindly agreed to have the proceedings of the tenth annual convention of the association printed free of cost to the association, in the same manner as in former years, provided, of course, that the association desires this to be done.

Dr. Roche has had the honour of being Honorary President of the association for the past three years, and has always taken a very keen interest in the valuable work which the association has done and is attempting to do.

Yours very truly,

E. F. DRAKE,
Superintendent of Irrigation

NORMAN S. RANKIN,
 Natural Resources, C.P.R.,
 Calgary, Alta.

EDMONTON, ALTA., July 22, 1916

Regret that I will be unable to attend Kamloops convention. Mr. James McCaig and E. A. Howes will represent the Department of Agriculture at the meeting.

DUNCAN MARSHALL

THE CHAIRMAN,
 Western Canada Irrigation Convention,
 Kamloops, B.C.

CALGARY, Alta., July 25, 1916

Regret exceedingly pressing work which I find here on my return to-day from Montreal prevents the possibility of my attending the Kamloops meeting. I trust that you will have a most successful meeting and that your deliberations will assist the great work of irrigation development in the West.

J. S. DENNIS

C. E. LAWRENCE, Esq.,
 Secretary, Local Board of Control,
 Box 204, Kamloops, B.C.

OTTAWA, Ontario, July 17, 1916

MY DEAR SIR,—In my Minister's absence, permit me to acknowledge your favour of recent date, inviting him to be present upon the occasion of the convention of the Western Canada Irrigation Association. Dr. Roche is at present his way to the Yukon, and I fear will be unable to return in time to be with you. May I, in his behalf, however, express his appreciation of your invitation.

Yours sincerely,

J. G. MITCHELL

DEPARTMENT OF THE INTERIOR,

July 17, 1916.

J. S. RANKIN, Esq.,
 Permanent Secretary,
 Western Irrigation Association,
 Calgary.

MY DEAR MR. RANKIN,—I am in receipt of yours of to-day's date inviting me to attend the annual meeting of your association at Kamloops, B.C., at the end of this month.

I regret that my arrangements will not permit the pleasure of accepting your kind invitation.

I hope that Mr. Drake, Mr. Campbell and other of our officers will be present, and that you will have a very successful meeting.

Wishing your association continued success, I am,

Yours very faithfully,

W. W. CORY,
Deputy Minister.

CHAIRMAN: Might I ask to have the report adopted by the convention.

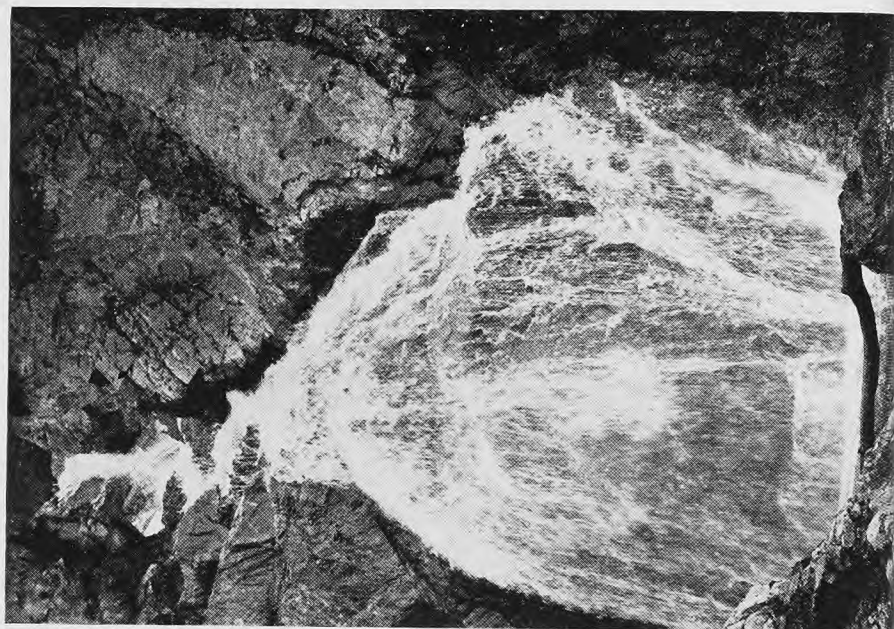
CHAIRMAN: I declare the report to be adopted.

The next speaker is Mr. James White, Commission of Conservation, Ottawa. I think Mr. White is so well known to the majority of the delegates of this convention that it is unnecessary for me to say anything further in introducing him to the delegates.

MR. WHITE: Mr. President, Ladies and Gentlemen,—I do not propose to take up much of your time to-day. I only received notice that I would be called upon to address this convention a few minutes ago.

In speaking to you to-day, my thoughts go back to some six years ago when I attended your first convention. That occasion was the time I made my first public address. Necessarily, being only a few months after I had organized our department here, it was an address largely of promise, but now I am glad to be able to say that we look back upon six years of achievement. We have not been able to do very much in the way of irrigation, but the blame, I think, must be laid at Mr. Peters' door. We have, however, been able to do some work in agriculture of interest to those engaged in agricultural work. The principal work being carried on is in connection with our illustration farms, one of which is established near your city on the North Thompson river. In undertaking that work we did as we usually do. Another organization having taken it up we later took it off them to demonstrate to the farmer that if he would only follow our instructions he would achieve similar results as achieved by our department. In other words, we take the experimental farm to the farmer. After having done that we turn the work over to the Department of Agriculture which, as you know, has voted \$10,000,000 towards the promotion of agriculture and are carrying it on and with their resources they could establish as many farms in the province as we have in the Dominion.

Then we have taken up the question of what we shall do with the returned soldiers. We have taken up the question of farm labour. That is a condition always with us and usually acute in the prairie provinces during the harvest seasons and in



the East it is with them all the time. We have taken up some counties as typical and have gone through them to ascertain the conditions and find out if the conditions there are as told to us and whether it is acute and whether it will last throughout the whole season or only at certain seasons. We have taken that up in a general way and it will be thoroughly discussed in the autumn at Ottawa, when Sir George Foster returns.

I will not take up any more of your time, but on behalf of the Commission Conservation will wish you God-speed in your work. (Applause.)

CHAIRMAN: The next item is an address by the Honourable Duncan Marshall, Minister of Agriculture for the province of Alberta. He, however, has found it impossible to be here. He has sent us Mr. James McCaig, of his department, to present him. Mr. McCaig is an author of a text book which has been of inestimable value to farmers who have taken it up.

MR. McCAIG: Mr. Chairman, Ladies and Gentlemen,—It was not my expectation to say a great deal of anything at this convention to-day. I have seen a copy of your programme and have seen the names of those associated with the work and it appears to me that it would be presumption on my part to attempt to take any considerable part in the programme. I have, however, felt some satisfaction in having been asked by Mr. Marshall to come to Kamloops to-day to express his regrets at his not being present himself.

Mr. Marshall takes a good deal of interest in conventions of this sort and is a good man at conventions, and, as you know, he took a considerable part in the conventions last year. It has, however, not been possible for him to be here at this time of the year. Neither was Mr. Craig able to come. They asked me if I would go and present their apologies for their not being here. That is as far as I can really go. I wish to assure you that Mr. Marshall's interest is sincere and sound and he expressed keen regret at not being able to be here.

The matter of irrigation in Alberta is firmly under the control of the Dominion Government and the matter of irrigation is so large that being a Dominion interest has not appeared that the Provincial Government has much to do with the irrigation concerns. Likewise, the corporations looking after irrigation are strong corporations and they are able to build up strong communities which are able to look after themselves pretty well, consequently, it does not appear that the people using irrigation require so much help as those in this province where they are working single-handed. At the same time the province of Alberta has a method in which smaller corporations formed for irrigation purposes are helped; further, our Government gives support to irrigation undertakings and enterprises of that nature.

The irrigation question is taking a strong hold in the province and where the people are susceptible to new ideas and where performance follows quickly upon the heels of thinking, it seems our function to do educative work and consequently it seems that we are doing the right thing in fostering conventions of this kind. At the same time, the Minister, I may say, is directly interested in irrigation farming and your men who are working on the engineering side are likewise realizing that the agricultural problem is one of the great problems to deal with. The engineer has started something, but the farmer has a lot yet to do. The man who does not

know much about watering, does not know much about irrigating. The problems in our province to-day are not so much problems connected with engineering, but are rather questions of direct irrigating. The acre returns and the heightening of the precious qualities are something that the farmer should see to.

I am not authorized to make any announcement as to something else our department would like to do for those in Alberta. I may say, however, that being an easy talker I can go as far as saying that there will come a time in the province of Alberta when the Department of Agriculture in furnishing education to boys and girls in that province will go much further than it has at present. After the great days of the war are over and we get back to the good old times and the money is better, the direct efforts of the department and the Board of Agricultural Education will double the grade of training which we now have for the boys and girls in our agricultural schools. If I were in an irrigation district it would be my interest to go to the Minister and impress upon him that when he starts a new school in an irrigation district, it should be an irrigation education that is given at that school. I am not speaking authoritatively. I am just tipping you off as it were. I think we can be of substantial use to the people of Alberta, and we would like to see them selling their alfalfa in the province of Alberta at a greatly increased price, instead of sending it away to the other provinces.

If I were the Honourable Mr. Marshall or if I were the other speakers, I think I would be trying to tell you about something we are attempting to do. Independently of irrigation, it has appeared to the department that in the matter of meeting the obligations of times like these, as Nellie McClung says, "our primary function is education." We have some twenty branches in our department made up amongst others of live stock, poultry, farms, schools and public health and two or three other branches and public liabilities. It does appear to me that at the present time the key-note of our conversation is education. We think the greatest thing before the coming generation in this country is the linking up of educational efforts for the social and economic importance of the rural institutions and on that account our effort at the present time is educative.

We have an object lesson in southern Alberta. Between the two irrigation districts we have a demonstration farm in the dry country between Calgary and Lethbridge, at Claresholm, where we have jumped past the grain farm altogether. We have jumped past the man who raises fodder and grain and sells it all, to the type of farmer who produces on 300 acres, 100 acres of cultivated crop and something in food; 100 acres of fodders and grasses and 100 acres of feed grain and that supports 40 to 50 head of live stock. I want to say that at this time our department is working hard in the matter of rotating crops. We tell them about individual enterprise; somebody tells them about horses; others tell them about dry farms. We have come now to a point where we feel that the people will want to look upon a type of agriculture and criticize the type of farming in which a man is engaged in a certain district and we have illustrated in the dry country that it is possible to work out an enterprise that is of the highest and best type of agriculture. Probably next year will not be as moist as this year, but we have a man in charge who will get just as good results as he has this year. Last year at Medicine Hat we took over 200 tons of succulent grasses in the middle of winter. Good cattle require a lot of this stuff. We have to get our concentrated food and fodders and we have likewise

to get our succulent feed. We feed over one hundred tons of silage on our Medicine Hat farm and in case of dry times we have that succulent feed in summer days. We have silos on all our demonstration farms. We believe that by demonstrating those things on our farms we are doing good educative work.

Now you people of British Columbia have beautiful pockets of land. Even coming this far through your province we have seen some good settlement. You necessarily have rather a good idea of intensified farming. While coming along one place near here we saw them drying hay on the clothes lines. That is the most up-to-date type of dry farming. (Applause.) Just by contrast I want to say that we are accepting our conditions in Alberta as we find them. We are not sitting in our car windows like so many commercial travellers from the East and saying that the farmer has too much land and saying that he is far better off with eighty acres of land than 320 acres. Those people tell it all in a minute after a glance through the car window. Just imagine how much these shoe travellers and bankers can see. The bankers for instance are trying to tell the farmers all about agriculture. They are all trying to tell the prairie farmer to cut his farm in three pieces. But we are not doing our work that way. We are taking things as we find them. We say, here is an economic condition in which men are doing pioneer work without too much capital. They require crops on short notice. We likewise look at those who go in for grain growing. Our investigations have shown that the residue of straight profits in grain growing is not much. A man on a quarter-section of land cannot support his family and his hired help on a straight grain growing proposition. We recognize that he has to have quite an amount of cash before he can get into the growing of succulent feed and other cash crops. We say, if a man has a half-section he is in better condition to do economical farming than the man on the quarter-section, in spite of the fellows who are looking out of the windows; that he is in a better position to make a profit on a half-section than on a quarter-section. A man on a quarter-section cannot farm on the scale that the man on the half-section can. There is another feature in production and that is the cost of machinery. We find it far better to spread it over half a section than a quarter-section. We say, here are the three factors of production. The land; the average price of land in Alberta is only \$10 or \$11 an acre. Here is labour; costs like anything and on a quarter-section one man would be required from six to ten months altogether. Then machinery; that must be given considerable thought. Those are the three factors that enter into production on a farm.

If labour is high is it not worth while to concentrate that and get the most out of it? If machinery is high, we should get along on what we can get cheap. Get enough land and get enough labour so that you will be able to go over it effectively and get enough land to make it worth while. To illustrate: Two men came out as homesteaders some years ago. Between them they had plenty of cattle. They settled right beside one another and by working the half-section as a one-farm proposition they have forged ahead and become rich. There is a half-section proposition with two men to work it instead of a quarter-section where you have to hire a fellow at three different prices during the year.

We are telling the man over in Alberta that even if he has all the varieties of weeds including mustard and stink weed, he can go on farming. We do not tell him that he has to get down and farm on a smaller area. We tell him to get gradually

into the type of farming that will enable him to clean his farm. When I was down on the farm at Claresholm there was a man ploughing with a four-horse team and at the same time a flock of sheep grazing in the field making a pound a day or ten cents a day to the farmer. That is our idea of farming where you have weeds. We think it is better to do that than to go broke.

I just say these things to invite your attention to problems of farm management and to bring to your notice economical conditions as we find them in Alberta. I believe that while we can do a lot of things in the way of individual accomplishment, on some things it is necessary for us to stand to one side and take a look at our propositions and see the aspect from a general view.

With regard to this automobile road from Kamloops to Edmonton. I would like to see this road finished. We look upon British Columbia as a kind of wayward neighbour. We are closer to British Columbia than Saskatchewan in a sense. We get all our fruit from British Columbia and if I might throw out a suggestion there about packing the fruit, I would say, that you must employ very small boys or wise men because I have often noticed that there is a fine display of large ripe fruit on top of the box, but beneath that there is apparently fruit that they wish to hide from view as much as possible. If we were to get together we might be able to help out each other in matters of this kind.

Now, ladies and gentlemen, with respect to some of these matters, we are trying to do the best we can in Alberta. We appear to be on a great prairie over there that keeps us in a purely agricultural occupation. There is enough gambling to it, but I do not think there is the sporting spirit in our province as you have it here. I do not think we look upon the bright side of things over there as much as you do here. One time in going through Alberta I came across a piece of oats. They were real good oats I thought, 80 to 120 bushels to the acre. I came across the field and said to the farmer, "There is a pretty good crop of oats." "No," he said, "that is not an extra good crop. I have seen a good many better ones." I said, "It looks good to me." "Well, no," he replied, "it is not as good as I have seen." I went on to the next field and looking at the good crop I said, "Here is a big crop of oats." He said, "Well, yes, but these big crops of oats are mighty hard on the land." On the other hand, I looked upon the fellow trying to hoe potatoes on the side of the hill in British Columbia and he had a mighty hard time, let me tell you, keeping on the side of that hill. I said to him, "That is a pretty hard spot to make a living on." He looked around and answered, "No, it is a pretty good one." "It looks pretty rough and steep to me," I remarked. "Well," he replied, "I have no fault to find with it, for I have only fifty acres of this sort of land, but the next fellow has got 100 acres." I think that type of man would be more of an asset to the province of Alberta than he would be to British Columbia.

I shall not take up more of your time. We are trying to do the best we can in Alberta. We are trying to do the best in agriculture with regard to improving social and economic conditions. The Chairman was good enough to mention the fact that I had produced a text book for the province of Alberta. I do not say this as a matter of pride. I am glad that I have been of any help at all in agriculture. I may say though that there is no place that I would rather have the approval of good men and women than in the province of British Columbia. (Applause.)

CHAIRMAN: After the very interesting address which we have had from Mr. McCaig, I think we will now call upon Miss Jessie Brown to favour us with a solo.

Miss Brown then sang "Somewhere in France," which was received by the convention with such hearty applause that she sang as an encore, "Somewhere a Voice is Calling." (Applause.)

CHAIRMAN: After the very excellent singing we must tender to Miss Brown a vote of thanks of this meeting for entertaining us in this way. (Loud Applause.)

CHAIRMAN: I will now call upon Mr. A. S. Dawson of Calgary, chief engineer of the Department of Natural Resources of the Canadian Pacific Railway, who will speak to us in the place of Mr. J. S. Dennis, who is down on the programme for an address. All those who have visited Bassano will know what an excellent piece of work Mr. Dawson has done down at the dam at that place, as engineer in charge of the work.

MR. DAWSON: Mr. Chairman, Ladies and Gentlemen,—I am not a dry farmer like Mr. Brown, nor a wet farmer like yourself, but as Alberta has recently gone dry, I am more interested in irrigation than ever. (Applause.)

It is to be regretted that the officers for the current year, or rather, that more of the officers for the current year have not been able to attend this convention, but it once more enables us to see how much devolves upon them. We are fortunate in having Senator Bostock with us and Dr. Tolmie to represent the President and the Vice-President as well as the province. I feel sure that you all regret that it has been impossible for Mr. J. S. Dennis to be present at this conference. He has always taken such an active part in the past meetings and his deliberations have always been of much value to us all. I only wish that I were more competent to make a few remarks for him. It was not until I was entering the hall this morning that I knew I would be asked to perform this pleasant duty. As a plain delegate to this convention, I would ask the privilege of expressing my appreciation to the representative of the Provincial Government, Dr. Tolmie, the Mayor of the city, and others for the kind expressions of appreciation on their part of the convention having met here at this time.

I have had fifteen years' experience on what are the largest irrigation projects in Canada, but I am willing to admit that the small projects such as you have in the immediate vicinity of Kamloops are quite often more interesting and worthy of fuller consideration than are the larger projects. These schemes though small should be considered as one of your greatest assets. When coming through on the line yesterday, I noticed at one or two points signs reading, "Irrigation not necessary." I rather construed this as being an admission on the part of the people interested in those lands that irrigation was not possible.

Might I be permitted to urge upon you all the adoption of the co-operative spirit, which is an absolutely sound principle for all business purposes as well as for educational purposes.

The benefits of irrigation show their results in better farms; improved living conditions; improved social conditions and a better citizenship. If conducted along proper lines it improves agriculture, saves the soil, inculcates industry, produces prosperity and should provide for posterity.

There is no doubt but that these conventions always result in a benefit to all concerned from the interchange of ideas and experiences of other successes or failures and from the programme which has been placed in my hands, I have no doubt but that this convention should be quite as good, if not better than those which have preceded it.

I am looking forward with much pleasure to listening to the delegates and the gentlemen whose names I see on the programme. (Applause.)

CHAIRMAN: I will now call upon Mr. James Dougall, Agricultural Agent of the Canadian Pacific Railway, to address us for a few minutes.

MR. DOUGALL: Mr. Chairman, Ladies and Gentlemen,—I had no idea when I dropped in here that Mr. Rankin was going to ask me to address this meeting because this does not happen to be my particular line of work. Many people ask me from time to time, "What do you do for the Canadian Pacific Railway?" I will tell you. My particular work is to act between the producer and the railway company. I am supposed to see that the producer gets service from the railway. If he does not do so I am to report it to the Vice-President. I also assist the producer in finding markets and do anything I can to help him to produce and distribute the stuff he does produce.

I have attended this year, I think, twenty-two conventions of farmers and stock growers and other agricultural meetings. I have just come here from a meeting of the British Columbia Fruit Growers' Association held at Penticton, and I was on my way to the Coast when I stopped off here. I was very much surprised yesterday while on an auto trip to the top of the hills to find so much wheat being grown. A gentleman passed the remark that you had shipped 200 cars of wheat from this point last year, and I did not know it. To be frank, I should have known it. I have been investigating since I heard that remark and I find that in 1914-1915 you shipped 1,700 bushels of wheat from here and for 1916 you have shipped 6,176,000 pounds, or 100,000 bushels. That is going some, but I presume that is due to a great extent to the remark made by a gentleman here a few minutes ago, that the good Lord has sent plenty of rain. However, I notice the crops here and they do look very good.

As regards the prairie crop. We started out to estimate it at 250 million bushels. Now we are estimating it at 375 millions. I think that is the last estimate of the crop and all coming out in fairly good shape so that it would appear that an era of prosperity had arrived. That remark about bushels is for wheat alone, and does not include other grains.

There are one or two little things that have caught my attention strongly in the course of my work. Last winter my attention was called to eggs being shipped from Vancouver to Toronto and the egg shipments from Toronto to Vancouver with the result that the cars were crossing on their respective journeys. I was asked why this was and I could not believe it was on account of the hens. It may have been advertising I thought, but it was not necessary. It seems to be wrong, this sort of shipments, although there is money in it for the railway. We do not want that kind of profit, however. There is something wrong with distribution along that line and we should see if we cannot straighten it out.

I do not think it necessary for me to take up any more of your time. I want this to be brought to your mind. My department is for the purpose of investigation. If you have anything you wish brought to the attention of our Vice-President I shall be glad at any time to call upon you and hear from you. I can assure you that the Canadian Pacific Railway is here to do the best it can for you all. (Applause.)

CHAIRMAN: The next address was to have been given by Mr. E. F. Drake, Superintendent of Irrigation, Ottawa, but as Mr. Drake has not been able to be present with us, Mr. F. H. Peters, of the Irrigation Branch, Calgary, will address us in place of Mr. Drake.

MR. PETERS: Mr. Chairman, Ladies and Gentlemen,—I am very sorry indeed that when standing up before you at this time, I am not proving an exception to the rule this morning. I am speaking for somebody else who has not been able to get here. It was expected that Mr. Drake, of Ottawa, would be here and we expected to have an address from him. I do not think that I can make an address at this time and as Mr. Drake is not here I would just like to say one or two words as representing the Dominion Government, Irrigation Branch, of the Interior Department.

As you all know, the Minister of the Interior is Honorary President of this association, and I am sure if he were able he would like very much to be here himself. I know also that if the Minister, who is the Minister who represents the Dominion Government in these things, had known I was going to say something here he would have desired me to express on his behalf the hope that this will be a most successful convention and to say that as the Dominion Government and his department in the past has always been most interested in the work of this association, so that interest will continue in the future and I am sure also in so far as it may be possible the Dominion Government will continue to give the same financial support and other practical support to this association that they have done in the past.

Now, we have a lot of other speakers here and I am not a speaker myself, so I am not going to take up any more of your time on this occasion. (Applause.)

CHAIRMAN: I will now call upon Mr. R. G. Williamson to address us in the place of Mr. Hargraves, President of the Cypress Hills Water Users' Association.

MR. WILLIAMSON: Mr. Chairman, Ladies and Gentlemen,—I see I am here in the same position as the others. I am here supposed to represent two or three other gentlemen. I am rather sorry now that I am not a citizen of British Columbia from the way I have been used while in your province. Unfortunately, forty years ago, I wrote to a cousin of mine in Vancouver and I asked him how things were out there. I was then in Winnipeg. He wrote back telling me to stay where I was as it would cost a lot of money to get out there. I took his advice and that is the reason I am not a citizen of British Columbia.

We have good crops in our section of the country this year. One of our best irrigators donated 400 bushels of wheat to the Patriotic Fund last year. He is just a worker like the rest of us. There are some three hundred small irrigation schemes there. We have not been recognized very much even by our Provincial Government,

but we hope to be because we are getting on our feet and will now make them sit up and take notice as to our progress.

We held a meeting of our Association this year which was fairly successful and from the welcome we have here we wish you to be down there next year with the convention. We have not the beautiful scenery you have here, but we have the wheatfields and one will have to off-set the other.

We came through the Arrow lakes and immediately the idea struck me that if we had the water that is running to waste down there, we would certainly appreciate it. They do not seem to have distributed the water evenly in Western Canada. I am sure that with Mr. Peters as head of the Irrigation Branch we will soon have him and his engineers providing the water for us from these lakes. (Laughter.)

There are three things that you have that we need very badly. We need your lumber. We need your fish. We need your fruit. These things are almost prohibitive when we get them on the prairie. There is something wrong with the price also. There is too much for the middleman and if we could get that done away with we would be much ahead of it.

I came up from Maple Creek and the citizens who came up from there with me are considered A1 in their home town. I did not realize the hospitality of this city until your Mayor told us we would have the freedom of the city if we wore the badge of this convention. I realize it more fully because another gentleman and I share the same room together. We have separate beds. It was in the "wee sma' hours" when he turned up this morning. If his wife had been here he would have been able to have his breakfast before he got up. Fortunately for me, I am always in bed and asleep at those hours and so I may not have to use the badge very often while here.

As there are a good many well known speakers here, some of whom I have heard before, and who I know will be of interest, I will not take up more of your time but will say that I hope you will all be with us next year in Maple Creek. (Applause)

CHAIRMAN: That brings our programme to an end this morning. We have some routine proceedings to take up. But, first of all, our Secretary has something to say to you.

MR. LAWRENCE: Mr. Chairman, Ladies and Gentlemen,—We have had some correspondence with His Royal Highness, the Duke of Connaught, who has expressed his regret at not being able to be present. His train does not arrive here until half past eight on Friday morning. It was impossible, therefore, for His Royal Highness to be with us. As he was not able to be present at the convention here, we decided that the convention should go to His Royal Highness. The next Session therefore after Thursday night, will be on Friday morning at the Kamloops railway station. The President will call the convention to order. At half-past eight the Duke of Connaught will arrive and will be asked to become the Patron of the Western Canada Irrigation Association and to accept the badge of that association, which we have prepared for him. He will then address the wounded soldiers and he has expressed his wish that they be brought to the station that he may express his pleasure at seeing them. Therefore, we wish as many as possible who can possibly

stay until Friday morning should give His Royal Highness a good send-off. He has won his way to all hearts in Canada. He is going with the splendid reputation of his august mother who would go anywhere to visit a wounded soldier. She would visit soldiers whenever there was an arrival. His Royal Highness has kept up this example and it is a matter of some pleasure and congratulation to ourselves that he is going to do that here on his way back out of the country to England. I hope, therefore, that all those who can possibly make it convenient to stay over will do so and convene at the railway station Friday morning. I will now read our lettergram sent to Col. Stanton, Military Secretary, H.R.H. Duke of Connaught, Victoria.

"Will His Royal Highness permit us to ask him to become Patron of Western Canada Irrigation Association? This memento of his visit would be greatly appreciated by all members of the association of whom Hon. Dr. Roche, Minister of Interior, is Hon. President; Hon. W. Ross, President; Mr. J. S. Dennis; Hon. Duncan Marshall; Hon. Senator Bostock, Vice-Presidents. Programme respectfully submitted. Last session of convention will be held at railway station, morning of 28th inst. Wounded soldiers in centre. Senator Bostock will present request and convention will sing National Anthem as Vice-Regal train departs."

to which we received the following telegram in reply:

"Your telegram 25th. His Royal Highness will be very pleased to become patron of Western Canada Irrigation Association, and will be pleased to meet deputation of association at Kamloops station on Friday morning, July 28. Please, however, remember that His Royal Highness' stay at Kamloops is only ten or twelve minutes."—"STANTON." (Applause.)

CHAIRMAN: We now have to appoint a Committee on Resolutions and under the constitution of the association, it is left to the Chairman to name the committee. I, therefore, have much pleasure in naming the following gentlemen as members of that Committee: Dr. Rutherford, Chairman; Messrs. F. H. Peters, J. L. Brown, Wollaston, James Johnstone. I would also announce that the Committee on Credentials will be composed of the following gentlemen: Mr. W. H. Fairfield, Chairman; Messrs. A. S. Dawson and C. E. Lawrence.

I am also requested to announce a meeting of the Executive Committee in this hall before the afternoon session. The members of that committee are: Hon. Senator Bostock, Chairman; Messrs. F. H. Peters, J. L. Brown, James Johnstone, R. A. Travis and the permanent Secretary, Mr. Rankin.

Arrangements have been made to take a group photograph of all those attending this session of the convention. This will be taken immediately at the close of the session at a convenient point.

We are going to have a very interesting afternoon session and I believe all the speakers are here now. We will, therefore, adjourn, until 2 o'clock this afternoon.

TUESDAY AFTERNOON SESSION, JULY 25, 1916

CHAIRMAN: We will now commence our afternoon session. I will call upon Dr. F. F. Wesbrook, President of the university of British Columbia. The doctor is so well known to the people of British Columbia that he needs no further introductory remarks from me. (Applause.)

DR. WESBROOK: Mr. Chairman, Ladies and Gentlemen,—I feel that a great responsibility is mine. Firstly, that I should be asked to speak at this convention at all; secondly, that I should be requested to speak upon agricultural education before you, who are all experts in this basic industry of the world; thirdly, that I should be permitted to take Mr. Motherwell's position on the programme.

I have been looking forward for a long time to visiting Kamloops. I have seen it usually as I was passing through on the train with engagement at the other end of my journey. This led to depression and disappointment that my long promised pleasure was again deferred. But I am now rewarded in being able to see something of your wonderful country at first hand. We know the splendid things you have been doing and are now to see them. We have heard of your stock and your crops, and we may now see what transformations have been wrought through irrigation so that the seeming wastes are changed as by wizardry into veritable Edens. We realize that yours is not only a good country for animals, but also for man. It is good alike for the strong and for the weak. You have an institution here in which we all take pride. In it those citizens of the province who have been retired from the ordinary business of life by sickness are restored again to strength. I refer to the King Edward Sanatorium, which, I understand, we are to visit to-morrow. Your life-giving climate energizes the well and vitalizes the ill. It conserves and restores.

Amongst you who are attending this convention are people who are known far and wide as experts both in the teaching and practice of agriculture. I can therefore not venture further than to hazard a few observations and principles as one who sees your work from the outside. This may be productive of perspective or it may not. I think, however, that my agricultural education is progressing. I have learned something during the last week by my trip to Penticton and to the Provincial Fruit Growers' Association and am looking forward to adding to my store of information at your hands.

Even in matters educational, one must speak with conservatism and modesty because although our educational methods and institutions have advanced we are yet in swaddling clothes. Civilization has advanced, too, and education, which should lead, too often lags. We are in reality just beginning to set out seriously upon our way, to bring teaching abreast of practice and to reconcile basic education with daily life.

To-day we will not lack for speakers who are experts both in agriculture and education. We have on the programme Dean Howes, of our sister university of Alberta. We have also Dean Klineck, of our own provincial university, who, though he is to speak on another subject, will, I hope, give us some observations on education as applied to agriculture. Mr. Gibson, too, of our Department of Education is here. He has already been able to appeal very strongly in this province

behalf of and to arouse interest in the perfection of a system for effectively teaching our boys and girls to take advantage of the opportunities to be had in agriculture here and now. There are also representatives from our own Agricultural Department and from our sister provinces. From me you might perhaps gain less in facts than in fun, but they will safeguard you from the mistakes which I might make in dealing with agriculture.

Since I have not had the privilege of speaking before to many present in this gathering, I presume that a few words in regard to the university of British Columbia's beginnings might be of interest. Ours is, I believe, the infant university in America. I recently had the distinction of marching at the tail end of the procession in Seattle on the occasion of the inauguration of the new President of the university of Washington. The representatives of the visiting universities entered the assembly hall in the order of the founding of their respective institutions. I occupied a proud position in the extreme rear, and have not forgotten it. I still feel the most proper and becoming humility. However, what we lack in past achievement and present prestige are compensated for by the future which lies before us.

Our institution, of which you expected much and of which you still expect much, was about to commence its work when the war broke upon the world. We had announced that the tenders for the first of the permanent buildings would be opened on August 10th, 1914. Our country had been at war six days. Our Board postponed action, to meet again in a few days. At the second meeting we returned the tenders unopened because of the world-wide instability of financial conditions, for which there was no precedent.

We had expected also to spend \$50,000 on library purchases so as to have an equipment of books on hand before the arrival of the staff. Suddenly the rate of exchange went up to \$6.75 per pound sterling. We cabled to stop buying books when the commission was half executed, the work in Britain and France having been concluded. At that time the purchaser whom we had borrowed from another university, was prisoner in an enemy country and never received our instructions. He was afterwards released. We have received the books he purchased and now have, with these and other purchases and gifts, approximately 30,000 bound volumes in our library and about 10,000 pamphlets.

We felt at the beginning of the war that the immediate future was too uncertain to continue library purchases in Europe, although the ultimate outcome has never been in doubt.

In order to continue our building programme, we advertised for tenders for the steel concrete structure of the building, hoping if the war should prove abortive, that we might complete it at an early date and thus avoid delay. This contract was let, although this building on the permanent site must remain at that stage for some little time yet.

In regard to our plans for grounds and buildings, we had secured the best advice to be obtained in this country, Great Britain and the United States. The late Dr. C. C. James was good enough to come out and meet with our landscape, engineering and architectural commission. He advised us in regard to our agricultural development.

Owing to the conditions which the whole world was facing, there were many people who were rather inclined to doubt the wisdom of going forward with the university. However, it seemed to us all that if ever a mechanism was needed to take its part in training our youth to meet the conditions involved in the destruction of war and later reconstruction, now was the time. Work was therefore begun. Explanations were not needed. Neither were apologies—nor are they now, and I shall not bore you further with the “might-have-beens.”

The university was opened on the day announced. We had to content ourselves with temporary quarters. Despite the war, 379 students registered during the first year. There are at present about 150 of our men at the front. Fifty-six students of McGill University College who had planned to come to us had enlisted before we opened our doors. When you think that we had only 228 men registered in our first year, the remaining 151 students being women, you will see that the university is fairly well represented by nearly 100 who have gone since. Conceived in times of the world's greatest prosperity and born in the crisis of world war, we shall not be lacking in traditions. The fact that your university in its earliest days has been permitted “to do its bit” for the Empire and for the maintenance of the world's ideals and standards cannot but serve as an inspiration in later years. Our boys, with students, graduates and men of university type from our sister provinces, constitute the Western Universities Battalion, each of the four western provinces furnishing a company. That battalion is not the worst battalion of the twenty-seven now assembled at Camp Hughes; in fact, I am told that it is the best. It is, in any event, the first university battalion to be organized in Canada. A great proportion of the men already have received their officer's certificates, and it would not be surprising if the battalion is called upon to furnish men as officers to other Canadian and British troops.

Military drill is compulsory in our university because we believe that when free training is given at the expense of the state for life's work, that the individual thereby obligates himself to make some return. Furthermore, we believe that the care and training of the body are just as important as of the mind.

In regard to the work provided. Under the conditions of temporary organization and housing, we had to leave a number of fields uncovered. At the time war was declared, a number of the very best men had been induced to sever their relations with other institutions and organizations and had been brought to the province. The first appointment made was that of Dean L. S. Klinck, of our Faculty of Agriculture. Many of you know Professor Klinck, or knew him before we were fortunate enough to enlist him for service in our province. Dean R. W. Brock, formerly Director of the Canadian Geological Survey and Deputy Minister of Mines, was appointed to the headship of the Faculty of Applied Science. Other men of similar type and calibre were appointed and had reported for duty or were on the way. The members of the staff of that splendid institution, McGill University College, which went out of existence when the university undertook its work, were already here. We were bound to continue and extend the work to which the province was already committed through the activities of McGill University College. This work was largely of a more classical and standard college type and did not provide for the immediate application of expert knowledge to the practical affairs of life. The experts in the practical sciences, who had already reported for

duty, consisted of heads of departments, each of whom was expected to organize his own department and make further recommendations for staff, had it not been for the war. As you will see, a certain number of the units of the larger institution which had expected to begin its operations in 1914, had been assembled, which, with the staff already on the ground, who had been covering such basic subjects as mathematics, languages and similar work, had to be welded into a temporary organization. This of necessity left a number of fields uncovered and threw upon certain of the men work which we had expected would be taken by others who were not yet appointed.

I am sure that you will approve of the original plan, which was to bring the best obtainable experts to the province in ample time so that they might look over conditions and have time to plan the work and equipment and each to organize his respective staff or faculty.

You will be more interested, perhaps, to know what has been possible in the way of agriculture in spite of the changes in plans. You will perhaps also recall that in the great institutions where agricultural training is provided, the initial and current expense is enormous. The universities of Minnesota, Illinois and Wisconsin each spend annually upwards of \$600,000. This is true also of the State College of Agriculture at Lansing, Michigan. The buildings for the Manitoba Agricultural College have cost \$3,500,000. Dean Klinck has been single-handed. He reported for duty in the province over a year before the university opened its doors and has spent his time in a thorough investigation of conditions throughout the province. During this time he has become personally known to many of you and has given lectures and addresses before gatherings of every kind. He has co-operated with our provincial departments of education and agriculture. He has been appealed to for expert information in many directions, and has been in most parts of our vast province. He has been judging exhibits for you. You must not think, however, that these have been the limits of his activities. Already he has been able to bring over ninety acres of the university site at Point Grey under cultivation. Last year he instituted experiments to determine the best treatment of soils and the most suitable crops for that land. Certain breeding experiments were conducted. He had a series of experimental plots which yielded to him the basis of procedure in the development of his present ninety-acre plot and the other land which is to be brought into a state of fertility. Exact record has been kept and the commercial, as well as the scientific viewpoint, has been always considered.

It has been the plan of the university to organize the agricultural college, providing the necessary land, buildings and equipment, so that from the very beginning provision would be available for the training of experts through a four-years' course. We wished in our own work of training experts to provide men of sound judgment and broad horizon, who would be most helpful in our province, where agricultural conditions are so complex as almost to be bewildering. In this way we hoped to avoid the making of costly mistakes and the discouragement which is all too frequently encountered. I am sure we all believe in providing the expert for the avoidance of mistakes rather than to wait for him to cure them.

For many years I was active in public health work. It was a continual source of amazement to me to see communities proceed to the expenditure of thousands of dollars in the installation of water works and sewage disposal plants on the

basis of the opinion of the town council or some local authority, whose enthusiasm was in inverse proportion to his training and soundness of judgment. When disaster came the expert was called in. He could not save the lives which had been lost and usually found it necessary to expend in cure many times the cost of what would have prevented.

We, in British Columbia, have need, which is greater than that of many of the other provinces, for experts in the beginning of our agricultural development, and we therefore planned to provide for the education of these agricultural experts in the beginning, intending to extend the work as rapidly as possible so as to provide short courses at the university and extension work throughout the province, which would bring our own experts into touch with local conditions. In this way expert knowledge would ultimately permeate the whole province, not only through the experts trained and sent out from the institution, but through personal contact of the university staff with the workers in agriculture.

We heard this morning that agriculture in British Columbia was improving but that it required brain and some capital in order to make it a success. We believe that we have a very superior class of population and that we have a much smaller percentage of illiteracy than in other provinces. Our education department is one of which we can well be proud, and we are not sorry that in many of our communities our one best building is the school. We rejoice that our teachers are better paid than in other provinces and look forward to the time when we shall realize that the pay should be such as to encourage the very best men and women to go into the profession as a permanent life's work.

We realize that in Alberta, where conditions are different, a splendid solution of the present agricultural problem has been found in the agricultural school. One cannot help wondering, however, how the public schools, the agricultural schools, the University College of Agriculture and the experiment stations are ultimately to be related so as to do the best team work. Doubtless our sister province will effect a sound and efficient co-operation. In the meantime, the problem of providing immediate agricultural instruction is being met.

In British Columbia, through Mr. Gibson's work, opportunities for basic training and the inculcation of agricultural principles is being provided in the high schools, which will be brought into proper relation with the university, whose main function was deemed to be the training of experts, the prosecution of research and investigation and ultimately to constitute itself the expert investigations arm of the province, with the added work of providing short course instruction at Vancouver and at various points throughout the province for those who are unable to attend the full course designed for experts at the university. In addition to this the carrying by the university extension movement of agricultural instruction directly to the man engaged upon the land, in such a way as to articulate with and extend the primary teaching given by the Department of Education in the schools, is planned. The advent of the war disarranged this plan, and in order that the university might be doing something to foster an interest in and extend our knowledge of agriculture as widely as possible, a course was arranged by Dean Klinck which was called "The Scientific Basis of Agriculture." This was open to all university students and about forty elected it. Dean Klinck could very much better describe it than I, and I hope that he will do so. He furnished a background



Concrete Lined Irrigation Ditch

of the history of agriculture and a foundation of the physical and biological sciences. It did not end there, however. It went into the social as well as the economic side of agriculture because he felt that we are not going to solve rural problems on a sheer basis of increased acreage or of bushels per acre. We must make rural life worth while. In comparing the rural life of Manitoba in 1878 when I knew it as a boy, and the Manitoba of to-day, we see that rural life then was existence, not a life. We often wonder why people go to the cities. Why should we wonder when we consider rural conditions? Dean Klinck gave instruction in his course on the administration of the farm and scientific management. He took into consideration organization, gave some account of the different developments in various countries involving governmental assistance. It was a practical course given by a practical man which did not ignore the human element. The late Dr. C. C. James was very much interested in it and tried to induce Dean Klinck to publish the lectures in the form of a book.

The course was very popular and students are given credit for it towards the degree in arts. It seemed important that students who had been born and brought up in cities should get some real conception of rural life, since they should not be deprived through ignorance of the possibilities of a vocation, for which they may be naturally fitted. Students who intended to become teachers and whose work would bring them into the country, were enabled by this course to take an intelligent interest in the problems which will surround them, to be of intelligent help to their students and to have a sympathetic understanding of the problems of their parents. Certain students who were looking forward to the ministry took the course. This brought them into closer touch with the life and work of their future people, should they be called to rural communities. Future lawyers, doctors, business men and, we suspect, legislators, have taken this course, and we plan to continue and extend it so that students in arts and science will have opportunities of still further courses in agriculture, in forestry and in other subjects which bring them close to the land.

In the meantime we are going forward with the work of organization and development of our agricultural college and have proposed a plan of co-operation with the Dominion Government which will enable us to give short courses of instruction in agriculture to returned soldiers who may wish to go upon the land. This should enable the staff to determine whether such men have the necessary aptitude, lacking which they should be discouraged from going on the land. It will enable others to choose land more intelligently, to determine beforehand the lines in which success may be reasonably expected. We hope that we may be permitted to do this work so that the university may be doubly patriotic, not only in sending her students forward to participate in the war, but in helping to welcome those who have given their services to the country on their return to civil life and do everything that is possible to ensure their happiness and success.

A point which I wish to develop to-day is that the day of the pioneer is pretty well over. To-day we are equipped with everything that the twentieth century has produced. It lies to hand ready for use. Pioneering in Manitoba in 1878 with the present rail and steamship communications, with electric power and light telephones, automobiles and areoplanes would have been a very different thing. We are apt to be very proud of our achievements in this direction. How have

these things come to us? We obtained them through concentration of one individual on a particular line of work, so that he became more and more expert at it. This has come to be the day of the expert and the man who knows a great deal about everything and not much about anything is regarded as a misfit. As a sign of our evolution, take for instance the naturalist. He is pretty well extinct to-day. In his stead we have many men, including the expert with the microscope who is an authority on the flagella of bacteria and can tell us everything there is to know about their method of locomotion. In his stead we have the botanist, or rather many botanists, each one of whom is an authority on a certain phase of his work. We have those who are expert on the different kinds of plants, those who are expert on the animal, bacterial and vegetable parasites and foes of these plants. We have experts on animal husbandry and breeding. As you consider this matter, you will see that now we have hundreds of men who cover in detail the knowledge at one time possessed in gross by the so-called naturalist. See how the work of the carpenter has been subdivided and how machinery has been introduced. These things came upon us so gradually that we have not realized it. We are impatient because man has less versatility by this development of specialization, but we cannot turn backwards, and to long for the good old days when everybody could do everything, is useless. This specialization is a definite and inevitable affair. It is an evolution for which we must prepare in advance. Our educational systems find it very difficult to furnish the proper proportions of cultural and technical training. Those of us who are specialists in different scientific branches are fully aware that useful knowledge may be cultural and that scientific subjects are not the less scientific if they can be applied to the ordinary problems of life.

Perhaps we attach too much importance to the exact subject matter which is taught in our schools. We should realize that the personality, character and outlook of the teacher are more important than the subject taught. We do not give our teachers and our university professors the support which is necessary. We hold them responsible not only for the training of our children's eyes, hands and mind, but for the inculcation of manners and morals. Our educational institutions are, by law, non-religious and yet we neglect in our own homes to an increasing degree the religious teaching and practice of our fathers. We take great pride in our schools when we seek to save our children the bitterness and disappointments of our own struggles and experiences which resulted through lack of knowledge. Yet too often we are more concerned about the physical equipment of our schools than by their human equipment. We may rightly regard the training of our children as the most important of our public functions and yet too often we leave it in the hands of inexperienced men and women, nay, of boys and girls, to whom it is but a temporary vocation, a stepping stone to what is wrongfully regarded as a higher profession, say law, medicine, mining, engineering, or the church. This is not the fault of our most excellent educational system but of public opinion which does not really regard school teaching as being the most worth while of all the callings. If it did, pay would be more on a par with responsibility and we should not be satisfied with anything short of the best equipment of natural aptitude and long training.

There is now little encouragement for men and women to look upon teaching as a permanent work. Schools lose their very best teachers to the professions.

Universities and technical schools are bereft of their best by commerce and private practice, which pay better and apparently command greater respect. All these things which are true of our formal educational mechanism are true also of the other co-ordinational branches which are necessary to prevent chaos, as we go on each becoming more expert in his own line and drifting further from his brother experts.

The chief co-ordinational branch, of course, is governmental, and the same conditions are found in regard to it. Just call to mind the meagre salaries paid to legal, public health, forestry, fishery and mining experts in the government service. How many of them are attracted away into commercial, industrial and corporational fields. It is not unusual to see a governmental expert, at a salary of a few thousands a year, opposed in a legal contest to corporation experts whose incomes are many times greater than his. Is the public properly protecting itself? You have men in this meeting who are worth many times what they receive in government service. Some of them have stayed in government service when offered much larger incomes to engage in private or corporation work. We have come to the days of the expert and the public should have and pay for the best that is to be had in order to protect the public from the predatory few.

Our agricultural training institutions will have, as one of their big functions, the production of men who shall be charged with the responsibility of looking after the interests of all. An increasing number of men and women will be required to keep the various groups of specialists related to each other and with their faces turned in the right direction. We need men who have been trained and become expert in one thing and who also have broad sympathies and great faith and vision. It will be their business to teach, to plan, to organize and to administer for individuals and groups who continue to be absorbed in their own special problems and who ignore their public obligations and opportunities. If democracy is to succeed, such men and women must be trained, used and paid. They must merit and receive confidence, and we, as citizens, must show more practical belief in our democracy than we have done in the past. We must exercise judgment in our public decisions and having taken pains, give time a chance to vindicate that belief.

We cannot escape personal responsibility by blaming any particular government or official for certain conditions. If our government is representative in fact as in name, then it is we, the people, not our mechanism and our servants, who should be blamed. It is time we adopted a universal standard of ethics and no longer maintain one for personal, one for business, one for professional and one for political purposes. As never before, we are faced with the necessity of preparing for our share of an imperial plan.

Whilst stressing the importance of the careful selection of teachers, we should not leave out of consideration that students perhaps derive more from each other than they do from their teachers. Whether what is acquired by one student from another is for good or ill is important. If we could develop a proper dormitory system we should be able to have living in the same house and meeting on the same staircase, men who are being trained in agriculture, others who have selected law as their life work, others who are to be doctors, another who has his eye on the ministry, another who is going in for a business career, and yet others who are going into the teaching profession. They should be encouraged in every possible

way to get each other's viewpoints in early life, to know each other's aims, to respect each other's standards. By these and other such plans we may hope in Western Canada to avoid what is probably our greatest danger, that is, sectionalism. We find it now almost impossible to keep in touch with each other. Not to keep in touch is to grow suspicious and to grow suspicious of those who are specializing in other lines and on whom we are becoming daily more dependent is to court disaster. As we see and know more of each other we realize that we are swayed by a mixture of good and bad motives and that the good motives outweigh the bad ones.

If in the time to come our young men and women, whose lives will diverge more every day after they leave college, have come to some common understanding in their youth, the different classes and groups which constitute our democracy will be less suspicious of each other and more sympathetic and helpful. In the days to come, when our legislatures are filled with men thus prepared, is it too much to expect that we shall be able to catch up in our co-ordinational mechanisms, with our tendencies towards specialization, which have outstripped them? How are we to proceed intelligently on our ways towards training the men and women who are to take up our work when we lay it down and of whom we hope and expect a development far in excess of our own?

It is to be assumed, then, that in technical courses technical subjects will be covered. Engineers will receive preparation for the undertaking of responsibilities which may place the lives, the safety, the property and perhaps the happiness of thousands in their hands. It is to be expected that they will have been offered every facility for acquiring first, accuracy, and next, speed. Above all, it is to be assumed that they are of sturdy character and will keep faith with themselves and with others. Yet no matter how skilled, how broad in vision or how faithful, they are handicapped if they are ignorant of the work and aspirations of others who have gone before them, of their successes and of their failures. They must know the work of their contemporaries. They will always lack opportunity to serve their fellows fully if they are unable by spoken or written word to convey their ideas to others. The greatest engineers of this and other countries would still be obscure had they been unable to spell correctly, to speak intelligently and forcefully, or to write a convincing and interesting report, or an accurate set of specifications for a board of directors, a city council, a federal or state government, or other bodies. How would the engineers of this country avail themselves of the knowledge and experience of kindred workers in Europe and elsewhere if some had not possessed fluency in modern languages? How lonely is the civil engineer or the superintendent of a mine isolated from others of similar tastes if he has not acquired or if he cannot acquire a taste for literature, or who has no intellectual pleasures. How impossible will it be to co-ordinate the specialists and technicians who are so absolutely wrapped in their own work that they have no common interests or tastes to share with others with whom they should co-operate. These considerations are equally applicable to the agricultural experts, many of whom for long weeks or months may be dependent upon themselves for company. Has not this isolation tended towards suspicion and sectionalism which set individual against individual and group against group? We surely cannot expect to solve our rural problems, to counteract rural depletion, to stimulate a current of desirables back from the city to the land

on the sole basis of improved agricultural technique or from economic considerations alone. Social reconstruction is just as necessary in rural as in urban districts. Not every son of every farmer will find his fit place in life on the farm. Nor does it follow because a boy is born in the city that his happiness and success will be found as a city dweller. Currents must be set up in both directions and the social considerations are just as important as the economic considerations. Those of us who are interested in medicine, realize the difficulties of getting skilled and satisfactory medical service in the rural districts. The cure of this ill is not to reduce the standards in medical education so that more doctors are graduated each year, because we now have twice as many physicians as we can properly support. The great difficulty in this profession, as in other walks of life, is that the cities are over-crowded and that the country districts do not pay at present. By this I mean they do not afford a living income, a chance to bring up and educate a family and an opportunity for the individual himself to grow. The city affords greater opportunity of advancement for physicians who are naturally, and by training best equipped. At the same time, and unfortunately so, it affords refuge for the weaklings who have greater facilities for hiding their mistakes and who can find counsel and help amongst their fellow physicians more easily in the city than in the country. Matters of public health and personal hygiene are perhaps more often ignored in rural districts. Recreation and the ordinary comforts of life are not so available there for those who are tired of dreary routine.

On such an occasion, I would not venture into details with which you are so much more familiar than I, but I could not refrain from mentioning the importance of keeping clearly in mind the social as well as the economic and technical problems which have to be considered in this world of ours which has become so complex.

There is no profession, to my mind, which is so exacting, which demands such versatility, hard work and wide knowledge as that of the profession of agriculture. It is, nevertheless, perhaps the most attractive field for a man or a woman of ambition. A knowledge of biological and physical laws is imperative. A sound grounding in the principles of experimentation with proper control of the variants must be had. Industry is the *sine qua non*. A business training is necessary and in addition a knowledge of human nature is essential, since co-operation in agriculture is the watchword, if for no other reason than in the matter of marketing. In addition, if we are to play the game, we must keep in mind the ideal of passing on the land to our children and children's children, in a better and not in a worse condition than that in which we found it. We certainly cannot sympathize with the man who said: "Damn posterity! What has posterity done for us?"

The pioneering days of the world are drawing to a close. The time has come to plan definitely for utilizing our lands in perpetuity. It is no longer easy, after having exhausted one piece of land, to sell out and move on. From now on we may expect to see different localities in this country, as in Europe, developing each its own type of cereals, fruits and other crops and in addition definite and wholly desirable strains of live stock, which shall be known throughout the world as produced by and peculiar to those localities. We shall look forward to our analogues of Clydesdales, Percherons, Shropshires, Holsteins, Jerseys, Berkshires, and other strains. This is an ambition yet to be achieved. It is only possible when, year after year, generation after generation, and century after century, the knowledge

acquired by the father is passed on to the son and the desired goal is reached, not alone through careful selection of the animals, but through careful selection, training and encouragement of the men who seek thus to glorify their calling.

The pioneer liked "elbow room," but elbow room will soon be hard to find. Individualism grew rampant. As we have seen, the pioneer's problems were his physical and biological, and not his human, environment. We shall hope for the perpetuation of individuality and for the growth of personal freedom. Such personal liberty for which every one should be ready to fight is the individual's right to serve, and not his right to impose his will ruthlessly upon another. We are back face to face with one of the problems with which we began, the relation of the individual to the mass, but shall not dwell upon the subject further than to say that with the annihilation of time and space we can no longer think and plan in terms of individual, of community, of state or of nation, but in terms of world. This is the natural and inevitable evolution. Yet individuals must be related to each other within groups, group must be adjusted to group, community to community, and nation to nation.

We have also seen the inevitability of specialization and may expect to see it increase instead of decrease. We have seen that in spite of the progress which has come to us whereby we have subdued nature, that our social complexities have increased with our scientific and economic progress. We have seen our inability to solve man's problems in terms of things. We have seen that specialization brings greater mutual dependence and greater danger of individual and group isolation. Group co-operation and co-ordination have not kept pace with progress in the various special lines. The two safeguards upon which we must rely are our educational and governmental mechanisms. Of necessity, these must not lag behind practice since we must teach what we have proven to be true, and we cannot afford to crystallize into law things which are yet in the experimental stage. We can, however, improve both these most vital mechanisms. Since specialism is inevitable, why not accept it as such? Acceptance of this dictum means the continuation and extension of our public training of experts. It means the stimulation of research and investigation on a public basis in order to lay bare yet more of nature's secrets. It demands that we retain and cherish the old truths whilst seeking new ones.

We should pour contempt upon our pride when we realize that our main problems are still those of the time of Moses, of Socrates, of Caesar, of Cromwell. In fact, they are eternal, and yet we have the equipment and tools of the twentieth century with which to solve them. We, who are so filled with the pride of progress, should be mindful of the work of our fathers. We must not throw away lightly the things which they found worth while. We should revere those who have gone before, and cannot safely substitute skill of hand and eye for training of mind and spirit. We must remember that speed spells progress, only when we are headed in the right direction. We have been pioneering in our province with twentieth century tools and should be fully alive to the danger of so doing. We have achieved our almost complete conquest of things by specialization. Each of us believes in his own specialty. He demands that others believe in it, too. He asks faith in his own integrity, skill and expertness. Does he get it? No. He knows full well how dependent others are upon his *bona fides* and knowledge, but they do not.

He, too, is sceptical of his own dependence upon other experts and yet increasing specialization which means progress means increased dependence of each individual upon others, of each group upon other groups.

Our great task is the establishment of understanding, faith and sympathy between individuals and groups. We must frankly recognize the need of highly trained and efficient experts to ensure perfect team work in peace as in war.

Upon us will fall a peculiarly difficult and responsible work since it is necessary to weld the people whom we have garnered from the four corners of the earth into a nation. Undoubtedly after this war is over we must expect many additions to our numbers. We shall wish to Canadianize and imperialize the new comers. It is necessary to ask ourselves what we mean when we say Canadianize and imperialize. It calls for the definite establishment of definite ideals and standards acceptable to and possible for all. That we can rise to this huge task no one doubts. The eyes of the world are upon us. Such an opportunity has never come to any nation. This is our opportunity to become the cultural, the intellectual, the spiritual, the industrial and the commercial Mecca of the Empire. It demands, however, a plan which is all-embracing. Whether we develop the individual for the interest of the state or mould the state for the best interests of each and every citizen, may, perhaps, bring the same result in the end. It requires the preservation of the individual's right to serve his fellows and seems to demand at times the subordination of the individual for the benefit of the whole. The same self-sacrifice, devotion, enthusiasm and hard work which have wrought the miracle of modern scientific and industrial achievement, without realizing our neglect of social and spiritual considerations, may be relied upon to unravel the complexities which have arisen when they are fully apparent. These forces cannot but succeed. The Golden Rule must dominate. The gospel of hard work must be preached. Minds and hands require training. Unto us is given the privilege of taking part in the upbuilding of the greatest Empire in the history of the world. We may well adapt for our motto that of the Prince of Wales: "I serve."

Shall we accept it? Have we the needed vision and strength? The agony which the world is enduring will have been suffered in vain if we cannot learn how to develop and use the best that is in each of us for the advantage of all.

Is not the world at war to determine whether the greatest right of every man is that of serving others, or of being served? We are adjusting our perspective of obligation on the background of individual right. (Applause.)

CHAIRMAN: His Worship, the Mayor of Kamloops, desires to make an announcement to this convention.

MAYOR TYRRELL: Mr. Chairman, Ladies and Gentlemen,—I am sure that during the course of the discussions and papers at this convention you will hear much good about water, and that water properly applied on the land will produce better and greater crops. I wish to assure you, on behalf of the city of Kamloops, that the drinking water is perfectly safe and may be used with the greatest liberty. It is also quite fit to be used to reduce any concentrated beverage which any of the delegates may use. We are, however, going to show you at the close of this session another use for water, and this will be demonstrated by the fire department



Tiles for Irrigation Works

of this city. We have an automobile fire department with three paid members, and the balance are voluntary members and all will, I think, give a good account of themselves. (Applause.)

CHAIRMAN: Our next speaker on this afternoon's programme is Professor E. A. Howes, Dean of the Faculty of Agriculture, University of Alberta, who is, I think, well known to most of the delegates here. (Applause.)

PROF. HOWES: At the outset I wish to express my appreciation at being called upon to speak upon the subject of agricultural education. I know the day has gone by when one needs to make explanations as to why one should speak on agricultural education. I recognize that the day is now with us when people realize the importance of agricultural education to our boys and girls, realize it is more important than the mines and fields and the flocks and herds on a thousand hills. That time has gone by, yet I am constrained to express my appreciation of the fact that this association always couples with its utilitarian purposes the work of agricultural education.

It has been rumored that we in the West are given to a certain amount of boasting, and as my subject is agricultural education in Alberta, I want to put you right at the start. Pat at the Confessional once said to his priest: "Father, I have to confess I kissed Kitty McBride." "Well, well," said the father, "and how many times did you kiss her?" "Ah, father," said Pat, "I came here to confess, not to boast." So much, to give you an idea of my attitude in this matter. So that when I speak of agricultural education in Alberta I hope you will not think there is any particular boasting on my part. I had the opportunity of speaking upon the same subject at Bassano last year, and now I see a number who were there, so I will try to switch off from what I said there and take the question up from another angle. I will talk about the machinery for agricultural education which we have in Alberta, and then I will take up a question which has been forced upon me this winter. It is not just exactly what you expect me to take up, perhaps.

When I speak of agricultural education in Alberta I like to discuss or think of it as a result of a condition in a new province, call it pioneering or what you will. The fact is, that the new provinces have gone ahead in a short space of time where it has taken a longer time for the older provinces. That fact is, that the new provinces have taken the failures and successes of the older provinces to guide them in their work.

I would like to speak this afternoon in the following order: First, agriculture in the public schools; second, agriculture in the high schools; third, domestic science; and, lastly, I would like to speak of the Faculty of Agriculture.

AGRICULTURE IN THE PUBLIC SCHOOL

When I came to Alberta I found they had a good course of study drawn up. I have had the privilege of acting on the committee that re-organized that course. The teachers must have special training for teaching agriculture in schools, so we had our summer school in the university. The first summer we had 78, next year 155, last year we had 311, and this year 316. That in itself was not enough.

We had to have a text book, and that was gotten out by the Department of Education. As the author of that book is here this afternoon, I am not going to say much about it, only to convey this little tribute, and that is, that as far as English and illustration and dignity is befitting an agricultural education the book is in a class by itself.

AGRICULTURE IN THE HIGH SCHOOL

I want to say a word or two as to the importance of agricultural education in the high school. I wish to speak about this generally. Later on I may not think about it. I wonder how many ever stop to think of the benefits of an agricultural education in the high school on the general community. In Alberta the teachers go through the high school under town conditions, and when they are through their course, where do they go first? To teach in some school out amongst the gophers and to teach children whose profession is agriculture. It is ridiculous and worse than that to send teachers out without an agricultural education to teach those children. If we would only stop to think about the up-hill task before some of these teachers, we would not laugh at them so readily. This reminds me of the story of the two young men who came to Alberta and took up farms. Later on they married two young girls from the East, as many in Alberta have a habit of doing. Time went by. One of the farmers one spring went over to his neighbour to borrow a bushel and a half of wheat to finish seeding a piece of ground he had prepared. The man being away, his wife came to the door. When he made his request known, she said: "Come out to the granary, I can get it for you." She picked up a peck measure and put in one, two, three, four, five measures full and then said: "That is just about as good as John could do it." He said: "Is there not more coming to me, I would like a bushel and a half?" She then started to count again and said: "Why, yes, there is. You know, I was only a school teacher before John married me." (Laughter.) This was one of the teachers who was taught in the usual way. That is just to show the double importance of agricultural education in high schools in Alberta.

I would like to say a word or two about the special form of agricultural education. You understand, of course, I am referring to our schools of agriculture. It is a pleasure to me to be able to speak about them. They are past the experimental stage and need no tribute from me. All I need to say is that they have prospered beyond our expectations. We started with 268 students the first year, 317 the second year, 355 last year, despite adverse conditions. That is not all. I sometimes feel that in agricultural institutions we pay too much attention to the number of students we get. I want to pay also a tribute to the quality of work done in the schools. I was principal of one of the schools at Vermilion and I want to say in passing that I cannot say enough as to the satisfaction expressed by the people who were sending children to the schools. Some of you may not know the work we are doing. The major subjects we are giving include a course in animal husbandry, field husbandry, farm mechanics and domestic science. Then we are taking up the foundational sciences—botany, chemistry and so on—and also, of course, mathematics and English. The courses are given to meet the

requirements of the boys going back to make homes on farms. I am not going to boast, as I said before, so I will only say that the courses have fully justified their inauguration.

DOMESTIC SCIENCE

As to the domestic science side, I want to say a few words. It has been most gratifying to see the increase last year in the attendance of girls to the school—girls, not coming there to fit themselves to teach domestic science, but most of them coming as home-makers and a great deal will depend upon what will be done in the school in this direction. Domestic science will mean a great deal for the home conditions, and our farmers in Alberta must attach more importance to the kind of home conditions that they surround themselves with. Our Minister is apt to say something about the installing of home machinery. He has taken the farmers to task as I have done for spending money on machinery for outdoors and not spending a proportionate amount indoors. We must realize that this is going to bring about a change in the attitude of the people on farms. In an older country a man thought it was time to take to himself a wife, and he had been paying attention to two young ladies in the neighbourhood. He was not sure which one he wanted, but he was sure he could get either of them. One was robust and one was delicate. So he went to his father and said he wanted advice about the matter, and said: "I suppose you will tell me to take the one that will do the most work." His father said: "Well, I don't know. Times have changed now. They are getting so much machinery in the home. Perhaps it would be more economical to take the one that will eat the least." (Laughter.)

FACULTY OF AGRICULTURE, ALBERTA

Now, you won't blame me very much if I take up some time to discuss the work carried on in our Faculty of Agriculture, as that is the work I stand for.

At the University of Alberta we have established a Faculty of Agriculture. Two years' work is taken up in the school of agriculture, and then at the Faculty of Agriculture we give a course of three years on top of that. We are very young yet as far as the work is concerned. I do not care to say very much, but we could not have entered into the work if we did not have ideals ahead of us. We have established a college of agriculture and it is just as well that we should state for what we stand. In that work it is the ambition of myself and all concerned with it, to make the course as truly practical as we can make it, just as it is in the schools, and by the way, I had better explain the word "practical." It is this: We are making our work practical because we want to put back of it the right kind of theory. No man was ever truly practical unless he had the right theory at the back of his practice. I would like to tell my experience in that particular line. When I was at the Experimental Farm at Ottawa I was given a piece of ground for the purpose of an experimental plot for seed tests. We put in about 282 plots in field roots and we had to treat them all alike in the matter of cultivation and so on. The Director of the station gave me five men to help in the work. I don't know what nationality they were, but I do not think they were Irish-Canadians. I

wanted to show them that I wanted to thin out certain plants so far apart and wanted them to see that the earth was not pulled away too much. I went away and afterwards when I returned I found that the men were practical enough but had no theory. They had done what I wanted them to do because if there was not a plant in the proper place they would leave a pig weed. (Laughter.) There are a great many people who think that to be practical a thing must be of the saw-horse or wash-board type.

We are trying to give a thorough course in animal husbandry. I need not speak to any great length on this. It is bound to be the leading industry in Alberta. In a sense, all others must be contributory to it. It is highly necessary that our boys should get a thorough course in producing and breeding. In that connection I would like to say, also, that there is a course in veterinary science given there, also of a practical type. The packing houses are reserving the condemned carcasses for our use and our boys go over there with their instructor and dissect those carcasses and find out first-hand about diseases.

I have not much to say about field husbandry, but we are endeavouring to link up the college with the work the boys are doing at home. It has always seemed too bad that the most important work in field husbandry is carried on in the institution when the boys are away at home. We are trying to establish a department whereby we can link up the work at home with the work at the institution. I have in mind certain co-operative experiments, not that they will amount to very much in the field of research, but they will establish a fellow-feeling in our work.

There are two or three other little points. Our boys should have a course in pedagogy before they get through. Too many schools have been sending out boys who are not equipped in the science of teaching. The majority of them will never teach, but we are hoping that when they go home they will settle down and at least make better trustees than others I have met. I would like our boys to have a course in public speaking and composition and all that pertains to both. Did you ever stop to think that boys from an agricultural college are up against a hard proposition? I would like all the boys to have an opportunity of standing up and saying in intelligible English just what they have to say on an agricultural subject and then sit down. I never had that training myself. (Laughter.)

I don't know that I need take up much more of your time in telling you of the machinery which we have. I have run it over in a general way.

There is one more point—the question of agricultural education, particularly higher agricultural education. We have met with a peculiar condition in this regard. There are thirteen boys taking the course. About ten of those boys have farms and have announced their intention of going back to the farm.

The last time that Dr. James was in the West that I know of, he and I sat down on a railway truck in the Canadian Pacific Railway station and talked together. He said to me: "The time has come when agricultural institutions should have backbone enough to get out and say 'we want higher education for our farmers' boys if they have the time and means to secure it, just as much as in any other profession,' and this time is up to you." It set me to thinking. We have boys going back on to the farm and we must meet their needs. In looking after their needs we are not neglecting the needs of those who have no farm to return to. I just mention this in passing because there seems a little misapprehension

throughout the country as to the function of the agricultural college. We have made it so that the boy can go on taking one year, two years or three years.

I want to emphasize one point. I won't say it is true of Alberta or British Columbia. It is true, however, of some other places. Let a boy go through a school of medicine and make a failure and the people do not come out and say: "Oh, McGill is no good." Let a boy make a poor lawyer and the people do not say the law schools are no good. There are even poor people in the pulpit and yet the people do not say it is the fault of the school of theology. But, let a boy go to a school of agriculture and when he comes out he dare not make a mistake at all because the people will jump right up and run down the agricultural institutions if he does so. I want to say that I plead with farmers to be as good sports as people in other professions.

My address is something like the old negro speaker who divided his text in two parts and said he would speak on the part that was in the text and the part that was not. Now I am going to speak about an instance that was brought to my attention in the winter. I was asked to speak on what the leader of the Y.M.C.A. called the rural problem. I asked him what it was and he said they read about the rural problems in the magazines. I said: "Look here; there are a great many rural problems." The problem just now is irrigation. With men who have a turn for economics the problem is marketing and production. If it was a clergyman who was speaking about the rural problem, one might expect it to be the falling off in the attendance in the country churches. What I think is the rural problem is the unfortunate and abnormal drifting of the young people from the country to the city. I need offer no apology for taking that up or making that statement. We must keep a more liberal percentage of our young people on the land if we are to make good. In reading up Roman history, I find the old writers lamenting the fact that the people were leaving the vineyards and flocking to the circus and the city—and Rome fell. That was the result of this migration. I do not say that we will fall that way. Once I was pleading for the retention of a bigger percentage of the boys and girls on the farms and a man took me to task and said: "Where would our lawyers and our preachers come from, if it were not for the boys on the farm?" And the people applauded. I often wonder if he saw the joke at the time. My answer to this was: "You are sticking up a straw man for the sake of knocking him down. A percentage of the boys will always feel that they should enter a certain amount of the so-called learned professions. I am speaking of the great army of young people who drift from the country to the city and nobody asks who or what they have been." This is the way I took it up with the boys at the university. There must be certain forces at work moving the young people from the country to the town life. For a short time we discussed the pulling forces. I asked the boys what were the pulling forces taking the boys from the farm, and one said shorter hours; another, more amusement; another boy, athletic development and sports; another boy said more comforts in the city. To the last one I said: "What do you mean?" He said: "Why, they have better comforts in the town. A fellow can get a bath in town when he wants it." I asked him if he really thought that had anything to do with pulling the boys off the farm, and he said "Yes." I said: "Probably you represent another generation, but I don't think it was the reason in my case." (Laughter.)

The only way we can meet this condition is to see what tends to push the boys away from the farm. There are a great many, I know. Some are outstanding. One is home conditions and surroundings. I am speaking about my province. There is room for a great improvement in the home conditions. I have seen people who have been out there some years and done well, but have fallen right into a rut so far as fixing up the home is concerned. Making the home attractive has a great deal to do with holding the young people there.

I attended a meeting of the United Farmers of Alberta and the Women's Auxiliary of that body, and I had to go easy there because the women were not unstinting in throwing the blame on the man for the condition of the home surroundings. I had spoken of the advantage of planting trees on the farm and some farmer said they couldn't get trees to grow there; others said they will live the first year and die then; others said we have a dry subsoil. A certain lady asked the question about trees in the first place. I told them how a man in Vermilion had dynamited his subsoil and got very good results with trees, and before I sat down the lady jumped up and said: "I would suggest you put the dynamite under the man first." (Laughter.)

Then there is the question of labour. The boy is proud of his hard work and will not complain of it even when there are times that he gets tired of it, or the irregular hours of labour, but the boy must have an interest in the work before he will like it. I can imagine a boy hating milking if he has to milk some of the poor old critters I see sometimes, but I can imagine him liking the milking if he knows and has the right kind of cow to milk. I can understand him having an interest in fat cattle if he knows something about feeding and the needs of the cattle he is feeding. There is only one way that that can be brought about and that is through the right kind of agricultural education.

Another point I would like to speak about is the social side, and Dr. Wesbrook spoke about that, too. I don't know much about British Columbia, only that I have had a good time in British Columbia for a day. I go to many Local Meetings of the United Farmers, or "Locals" as they are called in Alberta, and I can say that I do not know of any place where people get more enjoyment out of the meetings. I was scared when I went first because I knew I had to speak about some technical affair. Then I saw the seats were on skids. Then a man came in with a green bag, and that made me suspicious. Then a man told me they were going to have a dance as soon as I got through. So I told them I was going to cut my speech short. I remember one President of a Local introduced me this way. "You have to give him good attention for he is not going to take very long." Then he leaned over to me and said: "You take as long as they will stand for it." Then we had a talk and discussion and then supper and then a dance. I was talking about this in town to a lady, and she said about that dance: "Don't you consider it rather crude?" My only reply was that "If you knew more about home conditions in the country and knew just what that Local dance meant to the young people and the older people as well as I do, you would not speak that way about it, and, besides, I have yet to see where the latter day gymnastics in modern dances have anything on the old-fashioned quadrilles." (Applause.)

Then about athletic training in the country. There is no place where it would be more valuable and no place where there is less of it and the need of it greater than

in the country places. The lads in the school-house look at me when I say that as if I didn't know what I was talking about. We in the country always thought we could do away with three or four boys from the city. You will understand that what is required is more careful training. I have been thinking if something could be done along this line—something that will make the country life more attractive. That is a species of education that we must come to.

I would like to speak of one or two other things. One other, and to my mind it is the wrong attitude or outlook that the boy gets when he is small. That is why we want agricultural education in the public school. First, that the boy may see that the occupation of the father or mother is on a par with other professions. The boy will naturally get in his head a certain feeling if he listens to everything he hears about farm life not being so valuable. Besides that, if they get certain local papers and he sees the farmer taken off in some of the so-called humorous cuts and jokes, he is also going to get a wrong attitude there. We all know that these jokes and pictures are the same as with the Irishman.

Agricultural education should have a place in the schools because it is going to give the children the right viewpoint. The question comes up—how much agriculture can a school teacher teach? It is the trend of the mind induced in the child that counts. When he is older, that will not depart from him, and when he is older he will have a working interest in what is going on in agricultural research and all that pertains to it.

I have spoken in a general way on some of the points that are driving the young boy and girl from the farm. In the public school is the place to begin. Then, in the high school, because agriculture must be recognized as a paramount industry in our province. Then, there must be a school where the boy can get more agricultural education to get along with. Then, for the boy who has the time and means at his disposal there is no reason why he should not go on and get all that he is entitled to. If eight of the thirteen boys I have spoken of that we have in our college go back to the farm and if each of them settles down and lives out his life in a certain community and if he does what has been exemplified in his course, then we have done what we have hoped for.

I hope I have not been trying to boast of what we are doing in Alberta, or trying to do. I have just tried to set before you what ideals we have. I wish to thank you for this opportunity. (Loud applause.)

CHAIRMAN: I have an announcement to make which will probably be welcomed. The Local Board of Control has provided a very good brand of cigar, but before distributing them I would like to know if any lady has any objection to the gentlemen smoking. If she has, I would ask the lady to stand up. Thank you!

I will now call upon Dr. J. G. Rutherford, C.M.G., Superintendent of Agriculture and Animal Husbandry, Canadian Pacific Railway, Calgary, to address the convention. Owing to the lateness of the hour, it is proposed to change Professor W. T. MacDonald's address to to-morrow morning instead of this afternoon. I am sure you will appreciate very much Dr. Rutherford and also the opportunity of listening to these addresses this afternoon. Dr. Rutherford will now address you. (Applause.)

DR. RUTHERFORD: Mr. Chairman, Ladies and Gentlemen,—I can scarcely express my pleasurable gratification at hearing such excellent addresses on agricultural education as those which have been delivered this afternoon.

Forty years ago I was a student in the Agricultural College at Guelph, Ontario, at that time a rather primitive institution, but not by any means as primitive as the other means then available of securing agricultural education or any enlightenment in regard to the opportunities of agricultural science. Forty years ago the most outstanding feature of agricultural education was the distressing fact that there were practically no teachers who knew anything about scientific agriculture.

When you recall what has taken place in the last hundred years—I know I may have a bit of a reputation for this one hundred years of mine, but it is a way of bringing home to people some things they do not usually think about—when you consider that one hundred years ago when a man wanted to communicate with another man either personally or by messenger, he used exactly the same means as Abraham did to communicate with Isaac; less than ninety years ago, when a man wanted to travel from one place to another by land and did not have to walk, he used exactly the same means, only very slightly modified, as Pharoah did when he pursued the Israelites on their flight from Egypt. One hundred, or to be exact, one hundred and eight years ago when a man wanted to do anything requiring light after sundown he used the same apparatus only very slightly modified as Noah did when he had to milk the cow after dark. When you consider that one hundred years ago the number of people able to read and write in most civilized communities was about equal to the number who cannot read and write to-day, you will realize that the changes in the world's history during this very short period have been extraordinary. When you realize, further, that the human brain is physical exactly as the arm is physical; that it is only through use that the arm becomes developed and only by use that the brain becomes developed; when you consider the unparalleled rapidity with which education or, in other words, brain development, has been spreading in the last hundred years, the close connection between education and human progress becomes at once apparent. The extraordinary and notably cumulative advances achieved during the last century, and more especially during the last fifty years, are plainly attributable to the development, through education, of millions of human brains which without education would have remained fallow and unproductive.

As a young man, not quite a hundred years ago, but a very substantial slice out of a century, nevertheless, I was living in a town in Ontario in the practice of my profession. The evenings were long and there was a bowling alley where I used to occasionally develop my muscle. One evening there was a negro there, a fine specimen of the African race, who had come up from the Southern States by the underground railway before the war, a good citizen and a very skilful bowler. He was bowling against a prominent white citizen who was a great talker, one of the kind who can start their mouths going and walk away and leave them.

Well, this night he rattled the negro by his talk, and although the latter was a much better bowler, the white man got the best of the game. The darkey came back to the stand where I was and sat down. His lower lip was away down to about the third button on his vest, and he looked very unhappy. I said: "How is it So-and-so beat you; he has no right to beat you?" He said: "No, he aint got no

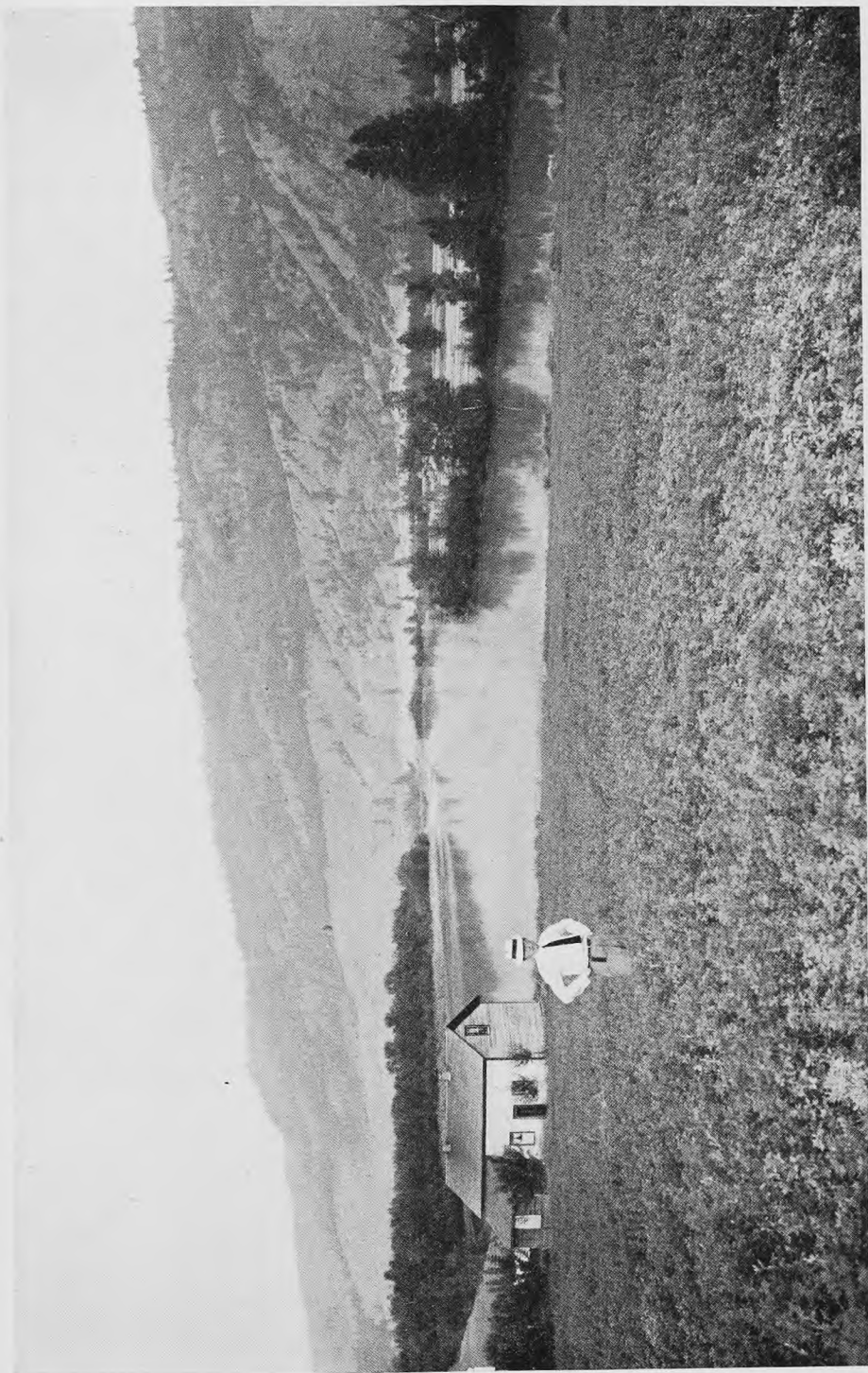
license to beat me." Then he sat for half a minute or so apparently thinking, and finally said: "Doctor, do you know, if that there man hadn't had a good education he would have been an idiot."

Later in my life I happened to be in an eleemosynary institution maintained by one of our provinces for the education of deaf and dumb children. I was intensely interested in seeing how the teachers opened up the minds of these poor children, many of whom had been in absolute mental darkness from birth simply because they were debarred from communication with others. Later I was in another institution maintained for the care of imbecile children, and there I specially noticed one little boy who was apparently brighter than the others, but who was deaf and dumb. I remembered the remark of the negro and what I had seen in the other place, and after observing this boy from time to time I succeeded in having him removed to the deaf and dumb institution where, after a course of training, he became as intelligent as most people. Prior to the awakening of the human race by the spread of general education, many brains were only very partially developed.

You may have observed that normal Scotsmen never say anything about the remarkable predominance of that race in the civilized world, in professional, commercial or financial undertakings. This is because the intelligent normal Scotsman knows that there is no special credit due to the race itself for this state of affairs, which is simply owing to the fact that the Scottish people have an advantage over the rest of the world in having had a good system of common school education established several centuries before the other countries woke up to the need of it. Generations of that education and the cumulative cerebral development arising therefrom have brought about in a perfectly natural way the acknowledged superior mentality of the Scot. Some unkind persons of other and less fortunate races sometimes claim that the brain development has brought about an enlargement of the national cranium, but of course being normal myself I have personally never felt any real racial superiority. (Applause.)

I can remember something else about education; when I came to Canada forty-one years ago, I lived in Toronto for a short time on a street called Bond Street, which led up to the Normal School on Gould Street. Every morning I noticed a most remarkable procession going up that street. They were young people, but mostly cripples. Some had a leg off. Some had an arm off. Some were going lame without the absence of a limb, but they were almost all more or less physically defective. I made enquiries as to this curious procession and I discovered that these were the Normal School students. I found out that it was the custom of the country that whenever a young fellow met with an accident and had an arm or a leg cut off, or was otherwise incapacitated for hard work on the farm, they made a teacher of him, and that the same applied to the girls—if they were not able for ordinary work or were crippled in the arm or leg or under the hat, they made teachers of them. (Laughter.)

It was quite a natural condition of a new country, and after all one could not blame the people for it, but it was rather a revelation to me, coming as I did from Scotland, where teaching is a regular profession into which people enter deliberately because of their supposed fitness for it and spend their lives as teachers, looked up to and respected as such. We, in Canada, have been following that somewhat crude



Fertile Bottom Land

method of providing teachers right up to the present day, only very slightly modified. Here, there is scarcely any real teaching profession outside of the universities. Teaching in the common and too often in the high schools is looked upon as a temporary occupation. A man goes into it as a means of raising sufficient money to put him through a course in the university, for the law or medicine or the church, and as for the girls—well, we know what happens to them. We have still a good way to go before education is given its proper place as the most important factor in our national development.

Coming now to agricultural education, I can remember some twenty-five years ago when I was a member of the Manitoba Legislature, getting myself very much disliked by the professors and pedagogues in Winnipeg because I advocated agricultural teaching in an agricultural province. I was looked upon as a re-actionary of the worst kind. You know, I need not tell you, that nearly all the pedagogues in Canada until recent years despised agriculture, looking upon it as an exceedingly vulgar and laborious calling, not to be considered in the same category as what they are pleased to call "the professions." A few years ago I was reading a paper before the Agricultural Branch of the British Association for the advancement of Science, and a discussion arose as to the advisability of making agriculture a section instead of a branch of that very great and learned body. The question was very solemnly considered. I have a keen recollection of a professor of astronomy ridiculing the proposition, saying that it was positively absurd to think of making agriculture a section of the association so long as the vastly more important science of astronomy remained only a branch. He was not the only moon-blind scientist, either, as the star-gazers carried the day and agriculture remained in the background as before. You can therefore imagine with what pleasure I have listened to these most intelligent and comprehensive addresses which have been delivered this afternoon. I see that we are getting along the road of progress. I see that the dreams I used to dream in my early life are coming true, and that we are going to have our whole system of education re-organized from the beginning up. Agriculture, which is the basis of our whole social fabric, by virtue of which we all live, move and have our being; without which we would all starve, and which has been neglected and put to one side for so long a time, is at last to be accorded its rightful place in our educational system.

The authorities in every province of the Dominion are now devoting the most careful attention to the question of agricultural education, and the subject is assuming greater importance from year to year. In the province of Alberta, where I have the honour to be a member of the Board of Agricultural Education, the policy of training the farmer's boy, for his future life work, as conceived and carried on by our energetic Minister of Agriculture, the Honourable Duncan Marshall, has already, although only a few years in operation, achieved most encouraging results. It is very gratifying indeed to one who has devoted his whole life, in one form or another, to agriculture and who has always been a keen advocate of agricultural education to see that the tide has turned at last and that the attitude of those occupying high places in the world of learning has undergone so great a change in this regard.

But this is not what I came here to talk about at all. The subject allotted to me this afternoon, if my memory serves me correctly, was live stock and irrigation.

Yes, that was it. Well, I don't know that I have very much to say about that. We had Dean Howes telling about the man who got up to preach and who spoke about the things that were in the text and the things that were not. If I went on to discuss irrigation and live stock, you would probably ask me why. After all, what is irrigation? Irrigation is simply farming under the ditch, that is all. If it were not necessary to have the ditch, if the heavens poured down a sufficient quantity of moisture, you would not need an artificial supply. There may be good farming or bad farming below the ditch just as there may be either without any ditch at all. Live stock is always an adjunct of good farming. So live stock and irrigation are co-related at all times. Good farming—good live stock. Without the good live stock you cannot have good farming, even if you have irrigation. If I were to preach on that text I would be, I am afraid, like the old Highland minister. He gave as his text: "The devil goeth about like a roaring lion," and he went on, reversing the construction of his sentences as they do in the Gaelic. "Firstly, my friends, who the tevil he was?" "Secondly, my friends, where the tevil he was going?" and "Thirdly, my friends, what the tevil he was roaring about?" (Laughter.) So, if I were to preach to you about irrigation and live stock, you would be quite justified in asking what I was roaring about. Every irrigation farmer, like every other farmer, knows that he must have live stock, and good live stock if he is to succeed in his operations. To illustrate the point I am endeavouring to make: Last winter the Economic and Development Commission was approached by the Fruit Growers of British Columbia with a complaint about the high cost of production of fruit in this province. I may say that I am afraid education was not the remedy they were in search of. We elicited some curious facts. We found that it cost the Nova Scotia farmer \$1.25 to put a barrel of apples on the car f.o.b. We found that it cost the Ontario farmer \$1.45 to \$1.50 to put a slightly larger barrel of apples on the car and we finally found that it cost the British Columbia grower \$3.60 to place a like quantity on the car. Now, there are several reasons for that. Some are good, and some are bad. Without going into them I want to say that the principal difference which will be patent to everybody is the fact that the Nova Scotia apple grower is generally a farmer, and the Ontario apple grower is also a farmer, whereas the British Columbia apple grower is an apple grower. This, among other things, would appear to indicate the advisability of an irrigation farmer being a good farmer and as such, having live stock about him. There are, of course, other reasons for this great disparity in cost of production, such as the expense of packing the three boxes, the great care exercised in selecting the best grades and so on, and these bring up the question as to whether the British Columbia growers have possibly gone a little too far in the matters of fine quality and elaborate packing. Of course, the luxurious millionaire especially of the lately risen variety—by the way, we have not quite as many of them in evidence as we had a few years ago—wants all his apples of one size and one colour and each with its own individual piece of tissue paper. On the other hand, the majority of the people living on the prairies want apples for apple pies and apple sauce and for the youngsters to eat and carry to school and they are not at all particular as to whether the apples are, or are not, packed in a beautiful box, all of the same colour and wrapped in the same kind of paper. If you want to get that market in competition with the Eastern grower you must get down to business

and send them apples without the frills, which cost money and are a serious factor in competition with people who can furnish the same article or possibly even an inferior article at a more moderate price. I am glad to know that a move has already been made in this direction and that some of the British Columbia growers are shipping the ordinary run of the orchards in less ornate and expensive packages.

If I have not tired you out I would like to speak a little while about live stock without any special reference to irrigation. I have been talking about live stock for a good many years. Live stock and mixed farming have been very much discussed in the prairie country, where soil exploitation masquerading under the name of development, has been rapidly diminishing the fertility of our soil. It is a fair subject for discussion here in British Columbia, because there is in this province a great opportunity for producing good live stock of all kinds; in fact, in point of quality, especially in some varieties, British Columbia is already well on the way to a leading position among the provinces of Canada.

What is the outlook in the live stock business? I may say that unless all signs fail, it was never as good as it is to-day. In the horse industry it is true that the motor car has very largely diminished the demand for the light-legged horse. I think I may say that as far as the light-legged horse is concerned, he is practically doomed. We of course do not know, but I trust, and I think there are good grounds for trusting, that after this war is over there will be no more demand for horses of the cavalry type. They will be a thing of the past. The motor car has taken the place of the light horse. The young man of to-day has given up the saddle. The light harness horse, although still of some use in courtship, will go out of business as soon as the self-guiding car comes on the market. Those who can afford to do so, use the motor car, and those who cannot, save up their money and buy those abominations called "motor cycles." (Laughter.)

For a number of years the heavy horse will be in demand. He is keenly in demand at the present time. Prices were never so high. After the war is over there will be a great demand for heavy work horses in the countries now ravaged by war.

I have in my possession an official publication from the Belgian Government giving many harrowing details as to what happened to the Belgian horses. The brood mares and foals running in the fields were slaughtered, being often used as targets by the German soldiers. One pure bred stallion, valued at 50,000 francs (\$10,000), was burned up in his box while the groom and his wife and children were forced on their knees to watch the agonizing death of the noble animal. Then the Germans realized that they were making a mistake in destroying these valuable horses and began to ship them to Germany. They sent their experts to select the best individuals, giving to the Belgians for payment orders on the Republic of France, payable at Paris. These orders were in German and were often for the most trifling sums; in one case the owner of two valuable horses found on having his order translated that it called for payment for a pair of rabbits. As a result of these methods the Belgian horse has been practically exterminated in his native country.

I have no doubt that after the war is over, people will come over here from Belgium to purchase horses for breeding purposes and this may also occur in regard to other European breeds of heavy horses.

So far as the draft breeds generally are concerned, I do not think there will be a falling off in the demand for these horses for years to come. I have had interviews with representatives of all the large cartage companies in our cities and they say that so far as they have gone in trying out the motor trucks they have found the horse much more satisfactory and economical. It must not be forgotten in this connection that all of these gentlemen are, through long association, firm friends of the horse. Whether the development of the motor truck, which until comparatively recent years did not receive as much attention as that of the passenger car, will be taken up with energy enough to make it sufficiently economical to supersede the horse, I cannot say. The heavy farm tractor is a thing of the past. The light farm tractor has come in to stay. So far as the horse business is concerned, a man can continue to breed heavy horses without any risk of market failure for at least ten or fifteen years to come.

The majority of you are not so much interested in horses as in other kinds of live stock. There is a tremendous shortage of cattle all over the world. There is an extraordinary demand. The number of cattle in the United States has decreased by some seven millions in the last nine years, and that with many more people to feed. We have, in Canada, the same diminution going on although we lack the corresponding increase of meat-eating population. A feature of the situation very readily overlooked is that in addition to the great reduction in the numbers of cattle going to market as compared with the figures of a few years ago, many of the cattle are much smaller in size and of lighter weight than formerly, thus still further reducing the available beef supply. There has been a tremendous waste in the slaughter of calves. In the United States calf slaughter increased by six hundred per cent. in the decade between 1900 and 1910. I am glad to say that owing to attention having been called to this short-sighted policy, it has been to a large extent arrested both in the United States and in Canada. The matter has, however, been too long neglected, with the result that the world is face to face with a tremendous shortage of beef cattle. Again, as every one interested in the business knows only too well, it is practically impossible to procure good dairy cattle even at very high and scarcely remunerative figures. After the war, not only Germany, Austria, Italy and Belgium, but every other country in Europe will have been drained of its supply of cattle and there will be a tremendous demand for cattle and the prices will soar far beyond any figure that any of us has ever seen. I seldom assume the role of prophet, but I am firmly convinced that we shall see a tremendous market, all the more so because we have been neglecting the industry and allowing our stocks to be diminished.

The same is also true of hogs. The hog supply of the United States is at the present moment three million less than five years ago. In Canada we have such a shortage of hogs that it is quite impossible to supply our own demands from our own hogs and large quantities of American pork, hams and bacon are being shipped into our country to supply our needs. I feel satisfied that hogs, provided fair play is exercised on the market, will maintain a high figure for many years to come.

Similar conditions prevail in the sheep industry. Sheep have practically doubled in value during the last two years and the scarcity is well known. The United States supply is falling off and our own supply in Canada, small as it always

has been, has been still further seriously depleted. There is no question but that both mutton and wool are going to maintain very high prices for many years to come.

The facts being as stated, it must be apparent to all that the live stock industry should be safeguarded and encouraged as a national economic duty, all the more important because as matters now stand the same conditions prevail in that industry as have been referred to by Mr. Johnstone as existing in regard to fruit, namely, that there is too big a gap between the price received by the producer and that paid by the consumer.

Conditions in the live stock trade are particularly bad in the United States and Canada due to the fact that the buying end has been in the hands of experts who have made it their business to figure out how they could buy the live stock at the cheapest prices possible and sell it at the highest prices possible, while the majority of producers not being educated to the same point as the men with whom they have been doing business, are more or less at their mercy. At a meeting of the National Live Stock Association of the United States held at El Paso, Texas, last January, and at which our friend, Dr. Tolmie, of Victoria, attended as a delegate of our own Western Canada Live Stock Union, this matter was taken up in earnest. A committee was appointed and an enormous fund has since been raised to fight the beef trust in the United States with the object of securing to the producer the fair share of the profit which should be his. (Applause.)

The Canadian packer has always been exceedingly short-sighted; I beg his pardon—in one particular only.

He has utterly failed to grasp the outstanding fact that the time of low prices should be for him the time of small profits and that if he wants to keep the live stock industry up and in a flourishing condition, he should, when the supply is plentiful, pay the producer as much as he can, cutting his profit for the time being accordingly. He has failed to do that and instead has, as a rule, crowded the stock-growers down to the last fraction of a cent with the result that thousands of men have been disgusted and discouraged and have gone out of live stock production.

It is as easy to get into vicious circles in the live stock trade as in others. As an illustration, take the importation of Australian mutton. It first began because the supply of mutton produced in Western Canada was insufficient to satisfy the local demand. The same applies to the mutton imported from Oregon and Washington. There was not enough to supply the demand in Canada and, consequently, the packers went elsewhere for it. Freight rates were low, mutton was cheap, and then when the people in Alberta and the other western provinces began to produce sheep for the market, they could not sell at a living price because the foreign article could be laid down at a lower figure. If it had not been for an unexpected chain of circumstances, one of which was the increase in ocean freights due to the war, another the outbreak of foot and mouth disease in the United States, coupled with a rise in sheep values in that country, and still another, the high price now obtainable for wool, this unfortunate condition might have continued indefinitely. The sheep industry in Western Canada is experiencing a marked revival, but in spite of the high prices the number of sheep in the country to-day is so small owing to the first mentioned conditions, that very few people are deriving any advantage from the high prices of mutton and wool.

Now, how are we going to improve these conditions? We have had more or less discussion about education this afternoon and I am going to see if I cannot do a little in this line myself. We must educate ourselves to protect ourselves as producers of live stock.

First of all, we want the live stock industry in Canada put under government control. We want it taken care of and its interests served and studied out and looked after as carefully as are those of the producers of grain on our prairies. Men who were familiar with the conditions in the grain trade prior to 1900 know that the producer was getting very much the worst of it in disposing of his grain. They know that the conditions under which he was working were very bad indeed, but even at that they were no worse than the conditions with which the live stock industry is contending to-day.

By the amendments to the Grain Act made in and since 1900, by the appointment of the Grain Commission and by other measures taken to regulate the grain trade, the whole aspect of affairs has been changed and the present-day grain grower is sure of fair and equitable treatment from the time he puts his grain in the elevator or on board the car until he gets his returns. We want the same thing done with regard to live stock; we want all markets under the control of the Government; we want a commission appointed to look after the live stock industry; we want every live stock commission man and dealer bonded with the Government so that the cattle and the money of the producer will be safe in his hands; we want all the weigh scales in the hands of the Government; we want the whole business taken care of and looked after by the Government; that among other things is what governments are for. (Applause.)

I have recently been sitting as a member of the Economic and Development Commission appointed by the Dominion Government, and also of the Saskatchewan Royal Live Stock Commission, appointed to investigate the conditions affecting live stock and live stock markets in the three prairie provinces. There is now a good deal of evidence available before both these commissions in regard to these matters, and to my mind there is nothing of more importance to the country than this very subject. The Western Canada Live Stock Union, of which I happen to be President, at its annual convention held in Victoria last October, embodied this principle of government control in a resolution which had been endorsed prior to the meeting by every live stock association in Western Canada. It is a case for united effort and, as with every reform of a like nature, we must keep on pushing until we get what we want.

It should be borne in mind that the live stock industry of this western country is only in its infancy. When one considers the enormous area, practically a thousand miles square, which lies between the Red river and the Rocky mountains and between the forty-ninth parallel and the barren lands, to say nothing of the rich valleys and benches of British Columbia, when one considers that as the fertility of the virgin soil begins to show signs of exhaustion, the keeping of live stock on practically every farm will become not a matter of choice but of necessity; when one remembers the vast areas of land which for one reason or another can be used most advantageously for the breeding of live stock and its maintenance up to a certain stage of growth; the stupendous possibilities of

this western country in the matter of live stock production begin to impress themselves on one's mental vision.

When one bears in mind that the city of Chicago with a population of nearly three million people derives over fifty per cent of its financial transactions from the Union Stock Yards, the future importance of the live stock industry to this western country begins to be apparent. It should be evident to all that in the interest of those who will come after us, as well as in the interest of these now here, it is a matter of duty to use our best endeavours to secure the removal of existing grievances, to eliminate, as far as may be possible the obstacles and drawbacks now adversely affecting that industry, with the view of ensuring a fair deal to the live stock farmer both now and in the future. When reforms are in question there is no time like the present. We must have action now before the situation becomes any more acute.

Another important matter is that of live stock statistics. There are really no accurate or reliable figures available at the present time. Nobody knows how many horses, sheep or swine you have in the province of British Columbia to-day. Nobody knows how many there are in Alberta, in Saskatchewan, or in any other province. The Dominion Government makes a stab at it and says there are so many and the Provincial Government says there are so many, and neither is anywhere nearly right. The system of crop reporting, which includes live stock, is practically valueless. The Minister of Agriculture for France told me, when discussing the question of furnishing accurate figures for the International Institute of Agriculture, that this department had three hundred thousand crop reporters, but he knew very well that their figures were absolutely untrustworthy. The United States has attained greater accuracy than perhaps any other country, but there is even there always a wide discrepancy between the figures of the Census Bureau and those of the Department of Agriculture, and we are in an even worse position.

Before our live stock trade becomes further developed I want to see a statistical system established which will furnish accurate and reliable information as to the numbers and kinds of live stock in the various provinces of the Dominion. From information furnished to the Economic and Development Commission, an annual live stock census for the whole of Canada can be provided, for approximately one hundred thousand dollars. In view of the fact that the live stock of the Dominion is valued at eight hundred million dollars, the first mentioned sum is not much to ask from a Government that can spend so many millions of dollars on other things. (Applause.)

As an illustration of the importance to the producer of knowledge of this kind, I may point out that in the Alberta Stock Yards at Calgary there were handled in 1913 only 26,000 hogs, while in 1914 the number of hogs passing through these yards was 194,000. There was a vague general impression that there were more hogs in the country than there had been in the previous year, but there was no way by which the producer, the man most vitally interested, could ascertain the actual facts and govern himself accordingly. Those interested in the buying end, many of whom have very extensive and systematic connections for the purpose, can and do ascertain the actual conditions throughout the country, at least in a general way. The isolated producer has however no opportunity of obtaining this knowledge,

without which it is very difficult for him to decide as to whether the price the buyer offers is a fair price or not.

The third point is that we need money and must have it. Last year ninety thousand head of cattle went from Saskatchewan, Alberta and Manitoba to the United States. Some of these cattle were fat and as at least a partially finished



Bridge over Thompson River, Kamloops, B.C.

product, no reasonable objection could be offered to their exportation. Nearly seventy thousand of those cattle, however, were stockers and feeders, among them a large number of excellent cows and heifers. Their estimated average value was \$54. We had millions of tons of feed that went to waste last winter for want of stock to eat it up. When a Yankee comes across to the Winnipeg Yards or to the Alberta Stock Yards and buys these young cattle and takes them home with him he does not do it out of any sentiment of love or affection either for us or for our cattle; nor does he do it for fun; he does it for the same reason that the pilgrims go to Mecca; he does it for the sake of the profit. He buys these cattle to take south and make money out of them, and we know that they will average well on to \$50 a head profit. They were probably worth that much more this spring than when he bought them last winter.

You will understand that these seventy thousand cattle went from here last year for the simple reason that the man who had the cattle did not have the feed, and the man who had the feed did not have the cattle nor the money with which to buy them. Plainly stated, that is what this movement of cattle meant. If the man who had the feed had had the money or had been able to go to the bank and get the money to buy some of these cattle and carry them over the winter, this country would have made the profit instead of the United States. I have no objection to

the United States making money, but there is no reason why they should make it at our expense.

It is up to the financial magnates of the Dominion to look into matters of this kind and take the proper steps to remedy the evil. Some system should be inaugurated in Canada whereby the man who has the feed can get the cattle.

In the United States they have a way of working it out. They have a number of live stock banks which practically confine their operations to the furnishing of live stock loans. These banks are largely owned and operated by combinations of live stock commission men in Chicago and other stock centres. Then there are a great many live stock loan companies which borrow money, chiefly from eastern banks at a low rate of interest and lend it to stockmen on cattle at a considerably higher rate. They lend it at eight per cent as a general rule and as they borrow from the banks at from five to six per cent, they are able to do business on a safe margin.

The operations of some of these loan companies are rather extensive. I know of one live stock loan company which has a capital of two hundred thousand dollars of which but one hundred thousand dollars is paid up. Last year this company made loans on cattle to the extent of nearly two and a half million dollars and the profits on the year's business were over eighty-five thousand dollars; a very nice clean up on a capital of one hundred thousand.

These companies, while not directly financed by the large packing companies, are frequently vouched for by them, and that is a condition which we are not particularly anxious to have in Canada. I know the National Live Stock Association of the United States is very dubious of this godfather.

These loans are generally made for six months, which gives the farmer a chance to graze stock for the summer or to winter-feed, as best suits his circumstances. Extensions are frequently given when market or other conditions render this necessary or advisable, but it is rather disagreeable for the borrower to know that the money is under the control of the packer who buys his cattle. Our farmer friends in the United States are not in a very pleasant state of mind over this feature of the system, which has nevertheless been of great benefit to them.

All things considered, it will be much better for the Canadian farmer to obtain his working funds directly from our own reliable chartered banks, provided the latter will take hold of the matter in earnest and devise some fair and reasonable method of making advances, adequate in amount and for periods sufficiently long to permit of the handling of live stock in a practical and business-like way.

Under the present system, our big chartered banks send out to the country branches, as managers, many estimable young men. The young manager, however, very often does not know how the farmer lives, moves and has his being. Frequently he does not get a chance to stay long enough in the community to get acquainted with the farmers resident in the neighbourhood, either socially or in a business way.

This is bad from almost every point of view as unless and until a bank manager is able to form an opinion as to the financial morality of his various customers, he and they are very heavily handicapped in the carrying on of business relations. Many of these banks are located in centres where there are four or five others, and where one or two with older and more experienced managers would serve the public much better. If one of these young managers makes an earnest

effort to get acquainted with his customers and their affairs, if he takes an intelligent and active interest in his work, in other words, if he shows initiative and energy enough to attract the favourable attention of his superiors, he is very shortly promoted to a larger branch, with the result that the connection he was forming, as valuable to the community as to the bank itself, is lost right there. If the banks hope to do business in farming communities in such a way as to assist in the building up of a sound and sane agricultural system and prevent such economic losses as that to which your attention has just been directed, they will have to select their local managers with great care, giving the preference to those capable of taking an intelligent interest in all matters pertaining to farming. The men who succeed in securing the confidence and the business of the farming public should be encouraged to remain among the people they know and who know them. It will, I am sure, prove to be much better business to increase their salaries and leave them where they can be of the greatest service, than to promote them to other and perhaps more important branches, thus losing the valuable personal connections which they have established. Unless some such policy differing widely from that now in vogue, is adopted in the near future, the banks will find that some other way of securing agricultural short term credits will shortly come into being. (Applause.)

I may say, before I leave this subject, that I was recently told by a gentleman in whose veracity I have entire confidence, of a friend of his who had a chance to make some money in cattle and his credit being good, he borrowed some \$20,000 from a bank, with which he bought cows. All the cows proved to be in calf and the profits were in sight and looked very promising when his note was called. He told the bank that he had not the money available; that it was invested in the cows, which were doing well. The banker informed him that he had orders from head office that all loans must be straightened up. The borrower told the banker that he could pay \$7,000, but payment in full was insisted on. So he sold the cattle, incidentally making a thousand dollars. A friend of his remarked that he could have made \$2,500 easily by holding the cattle until spring, and he replied that he knew that but that he did not have the money to do so and pay the note, but he said: "The thing that makes me so mad about it is that when I paid that \$20,000 loan, the manager turned round and said: 'Now would you like to borrow some more money?'"

I want to see a better deal handed out to the people of these western provinces in regard to the live stock industry.

The fourth point which I wish to briefly discuss is co-operation—co-operation, not only in production, but in the handling and marketing of live stock and live stock products. Co-operation has taken a long time to get a foothold. Denmark is the greatest co-operative country in the world. They have gone on improving their co-operative system there for the last forty years. Even in Ireland, which is the last country in the world where one would look for co-operation, especially in the light of the events of the past three or four years, co-operation is making good headway. We find that in the co-operative marketing of cattle in the state of Wisconsin people are making \$70 to \$85 a car more than they did when selling direct to the cattle buyer. In Litchfield, Minnesota, they are doing even better than that. In our own province of Saskatchewan a large number of co-operative

circles have been established and a great many cars have been shipped by them with most encouraging results. We know what has been achieved by co-operative action among the grain growers of the plains. We know the benefits derived from co-operation by the fruit growers of California, an excellent example which is, I am glad to say, beginning to be followed by the orchardists of British Columbia. I would like to see a co-operative circle established in every farming community. If properly started and carried on with energy and intelligence, it will very soon begin to extend its activities in many different directions, to the great advantage of its members, socially and morally as well as financially. We want the co-operation of the townspeople as well. Nothing improves conditions in the farming community and in the town more certainly and more satisfactorily than sympathy and understanding between the man in the town and the man in the country. If that spirit had been cultivated years ago the big organizations to which I have referred, the Grain Growers and the United Farmers, would have taken an entirely different form. The interests of the man on the land and his neighbour in the town are, after all, identical, but the farmer is not to blame for the lack of general recognition of this basic fact. The farmer was forced to organize to protect his rights and secure square dealing from the so-called business interests as the latter lacked the vision to see that in a country such as ours prosperity for the man on the land means prosperity for all. In the city of Lethbridge three years ago there was not a farmer on the Board of Trade, but now they have the farmers fully represented on that body, equally with other lines, and when any question of general interest to the district comes up for discussion it is considered jointly by the farmers and business men.

This principle is extended to include all public meetings called to deal with any important local issues and, needless to say, it is working out greatly to the general benefit of the entire community. We need more co-operation between the city and the country. Talk about agricultural education and the teaching of agriculture to the boys and girls in the schools! What better influence could be employed than to have the children in the country visiting the children in town and the children in town visiting the children in the country, and the parents going in and out as well? The majority of people now have good means of locomotion. If you can bring the town folks and the country folks together more, not only socially but in the various lines of public effort and public service, the problem of rural education for city children and city education for rural children would largely solve itself. It is only a matter of mixing up thoroughly and banishing the feeling of aloofness which breeds misunderstanding and the spirit of co-operation will take its place. Some of you may think that these ideas are visionary and Utopian. You will recollect that when I began to speak an hour or two ago, I dwelt upon the progress this world has made in the last one hundred years. I like to tell an audience that. It makes men sit up and consider what a really extraordinary age we are living in. In view of the facts I have mentioned, this world is only about two hundred years old. We have made more progress in the last century than we made in all the thousands of years preceding it. Think about it when you have a few moments to spare.

A battalion went to England and camped down at Shorncliffe on the sea. One of the officers, who was from Alberta, took a chap—also from that province—

who, like himself, had never seen the sea until he went on the ship to Britain, and posted him as a sentry down on the sea shore. He planted him on the sands with orders to stay there until he was relieved, and left him. When the allotted time was up, he went back and looked all round but he did not see his sentry. Finally he saw the head of the man—away out—just above the water, and he called out: "What are you doing out there? Didn't I tell you to stay here?" The sentry



Bridge over South Thompson River, Kamloops, B.C.

called back: "No, sir. You told me to stay out here, but this here creek has riz." (Laughter.) These ideas I have been speaking about were ridiculed twenty years ago. They were in advance of the times five years ago, but now, "the creek has riz." Times have changed, and it is up to us not only to talk about, but to do these things. I would remind you that whatever men dare they can do; all that is necessary is to get together.

There is still another viewpoint. The weavers of Paisley were great thinkers and noted reformers. Until comparatively recent years Britain maintained a fleet known as the Channel Fleet which, once a year, made a voyage round the United Kingdom, calling at a number of the principal ports. On one occasion, when this fleet was anchored at the Tail of the Bank, off Greenock, an old Paisley body went down to have a look at it. He went aboard the flagship and made a very thorough inspection of every nook and cranny to which he could gain access. Finally he attempted to walk into the admiral's private cabin, but was halted by a smart English marine who was on sentry duty there and who asked him, rather peremptorily, what he wanted. "Weel," said the weaver, "I was just gaun in to hae a bit crack wi' Admiral Hornby." "Oh," said the jolly, thinking to have some fun

with this curious Scot, "the Admiral isn't aboard; he's ashore, but 'oo shall I say did him the honour o' callin'?" The old man looked over his glasses and very simply replied: "Ye might just tell him that wan of the owners was aboard."

We are apt to forget that we are the owners. We are apt to forget in the strife of the political fight when we are led by the nose by one party and by the ear by another party that if we really want any legislation and will say so emphatically, we can have it. We are the owners. (Loud applause.)

CHAIRMAN: It is so late now that any discussion there may be on this address of Dr. Rutherford's will be heard and considered at the session to-morrow morning.

MR. LAWRENCE: I would like to just mention the products in front of the platform. These are all products of Kamloops and have not been brought from California. Those ripe cherries hanging there are proof of the honesty of the audience, and Mr. Johnstone, who brought them here, has the utmost confidence in the audience or he would have a special constable to guard them.

The session was then closed and the convention adjourned to eight o'clock p.m.

TUESDAY EVENING SESSION, JULY 25, 1916

CHAIRMAN: The first item on our programme this evening is an address by Mr. J. E. Tedder, Chairman, Hydro-Electric Committee, Kamloops, on "The Possibilities of Irrigation by a Hydro-Electric Power Plant in the Thompson Valley."

MR. TEDDER: Mr. Chairman, Ladies and Gentlemen,—Irrigation, I believe, is acknowledged to be the oldest of the artifices adopted by man to make up for the deficiencies or inequalities of nature in enabling him to supply his needs. In a primitive sort of way it was practised in Egypt and India in the most distant times and the genius of western civilization in our own age has enabled those antiquated systems to be extended enormously in their beneficial application to the service of mankind. It is, however, scarcely necessary for me to dwell upon the fact that these anciently peopled lands are not to be taken as typical of all countries where irrigation is practised. The modern plan is meant often to apply to a state of things unknown in Egypt and India. It by no means follows in our day that an area marked out for irrigation is necessarily parched and dry land, a fallacy only too widely accepted by those whose knowledge of this vastly important subject scarcely goes beyond the school-book age. You will forgive me, I am sure, if I find refuge, however, in these elementary principles of a subject in which all these present here to-day have arrived at that stage, when perfected knowledge in this all-absorbing topic, is merely the spring board to still new ideas, new fields to conquer, and new methods of harnessing the forces of boundless nature. Before I delve into the rambling details which go to support any theories of usefulness concerning the Hydro-Electric system of this city of ours, I am intending to set my mind at rest that it does not necessarily follow that a district almost a stranger to the gentle dew of heaven is the only one where the devices of man are necessary to trick the waters of the earth from the courses

hewn by them down through the ages. I am assuming then that, a district may have ample rainfall, and its soil may be of an exceptionally good quality for pasture land, on which sheep and cattle may be grazed with profit, or it may even be suitable for growing wheat or other grain. But I presume, and this appears to me to be the fundamental basis of national development, that if population can be secured it may be possible to make it provide a living for ten or a hundred times that number of people if properly irrigated. Given a convenient waterway and a solution to the puzzle oftentimes presented in the penning back, diversion, conversion, or any other means of hand-cuffing the capital necessary to carry out such beneficial work, it not only pays to convert such a tract of country such as I have instanced into an irrigation settlement, in duty to the land that awaits the master-hand, but it also explodes the theory nursed by the would-be farmer that he cannot farm in a comparatively dry climate on account of the uncertain rainfall. Here in this district, then, that excuse may be discovered, but, I venture to believe it is deep down, in fact considerably overgrown by the more fruitful theories that are bound to be born of an inventive mind, which is the obviously resultant state of being arrived at by an irrigationist, once he has even in the most primitive fashion, gone to the trouble of appreciating nature's bountiful gifts, whose sterling worth may be daily enhanced according to the amount of industry the man of the land cares to expend, and according to the breadth of vision he possesses.

It is a matter of considerable difficulty for the veriest novice to appear before such a distinguished audience as this, for my very imperfect knowledge of the subject which has doubtless formed the life-study of most of you will I fear be not as convincing as I would like it to be. However, in as brief a manner as I possibly can I will attempt to justify my foregoing remarks concerning the possibilities held out to the farmer if he will avail himself of a system whereby the abundance of water in this locality may be made to do anything, go anywhere, in fact, accomplish almost everything but speech.

For your general information I may be pardoned a little diversion in the way of a few historical facts relative to the water and light system of the city of Kamloops. In the year 1895, that is two years after the city's incorporation, the water and electric light plants which did service at that time were owned and operated by private enterprise. The gradual growth in importance of this city and locality very naturally soon made itself felt and the demand for these two important commodities likewise increased to such an extent that the plant referred to was soon found to be totally inadequate for the continually increasing demands made upon it. A not unusual situation rapidly arose; private enterprise was not capable of the financial expansion essential as a means to increased production. The municipal authorities arrived at that stage when steps to acquire the plant then in operation became absolutely necessary for the provision of the growing needs of the populace and the industrial requirements of the community in general. To those of you who may have chanced a walk in the park grounds and on to the city wharf it will be interesting to note that on the river bank close to where the wharf stands to-day a power house of frame construction was erected in which two pumps and one electric generator were installed. This, then, may be taken as the city's first venture in municipal ownership with regard to the supply of water and electric light.

Scarcely four years had elapsed ere it became apparent that by virtue of good fortune the city's growth again demanded more light and more water, but this time deliberate plans were made with an extremely optimistic outlook and the advice of a consulting engineer resulted in the provision of such new equipment calculated to meet every possible demand for the ensuing ten or fifteen years. The building situated a little to the west of this hall on Lorne Street was erected in accordance with expert advice in the year 1899, while its equipment consisted of pumps and electric generators much more efficient and of a considerably larger capacity than those upon which the city had depended for the previous four years. Ten years afterwards Kamloops seemed to be destined to reach a breadth of development that would outstrip the most hopeful estimate ten years prior, and again the burning subject was how to keep abreast of the times. The increasing cost of fuel at this period led to a search for other natural and cheaper possessions from which auxiliary development of power might be obtained. A reputable firm of engineers were consulted with regard to the possibilities of water power and upon their advice, authorization was given for thorough investigation to be made in respect of water sites in the neighbourhood. In the meantime, however, the plant in the building below already referred to demanded immediate relief, and steps were, therefore, taken to install a large generator and extra boiler capacity for the purpose of sharing the over-load on the existing machinery. Observations over a considerable period were taken on the Barriere river in order to ascertain what amount of water could be depended upon throughout the year which showed that a minimum capacity of two thousand horse-power could be developed, which was also capable of increase to ten thousand by creating storage on the Barriere lakes. With as definite an assurance as the laws of nature permit, the municipal authorities undertook to proceed with the initial development of two thousand horse-power, which could be increased from time to time as required by units of one thousand horse-power each.

The vagaries of climatic conditions, however, were borne in mind, and a supplementary steam power station of like capacity was provided for as a stand-by, in case of emergency. The steam plant was thus erected, the necessary machinery installed, and it began its era of usefulness in the fall of 1913, awaiting the day when it would be merely on the look out for accidents when the Hydro-Electric enterprise should commence operation. This latter was declared ready for trials at the end of 1914, in fact, so satisfactory were they that two months of actual work stood to its credit when, as was naturally anticipated, certain flaws developed and minor slides took place, which necessitated a period of adjustment. In the early days of 1915 the Hydro-Electric system of Kamloops was deemed ready for its long run, and what is more it is still running. It has taken a long time to provide you with the means to produce the theme for which I aimed and in which you are directly concerned. My reason, however, for quoting you so much detail may be attributed to my belief that you, as experts in the art of irrigation, require to be convinced that the man-made equipment is capable of harnessing nature's forces in a manner that is at once effective and permanent.

I am now going to assume the attitude of the auctioneer, for it is here that I am in a position to proclaim to all and sundry that the corporation of the city of Kamloops is ready to sell and deliver the goods, a colloquialism that may be pardoned. The magnitude of this undertaking for a city the size of Kamloops will

suggest at once that the mere supply of water and light for actual needs was only a part of the vision seen by the sponsors of the Hydro-Electric scheme. How to utilize the power still capable of development is an enquiry providing its own answer immediately;—irrigation, industrial expansion, and the present and future general manufacturing needs. The very nature of the community in which you find yourselves to-day provides, likewise, its own recommendations in relation to electric power for the purpose of pumping water on to the rich lands adjacent to the rivers and lakes with which the whole Kamloops district abounds. With the two thousand horse-power already developed it will be appreciated that all needs are supplied for the present. Furthermore, the fact that there are considerable periods of each day when electricity is not needed for lighting purposes is to be considered. It is here where an asset to both the agriculturist and the manufacturer lies, in that the corporation is eager to sell that power during its hours of inactivity at a very low price, so low, in fact, that the man on the land, while many miles from an industrial centre, may avail himself of the most advance processes known to modern science for the enrichment of vast tracts of land where, hitherto, the dominant crop has been prolific sage brush.

It does not require the brain of a Lord Kelvin to support the claim that electricity offers the cheapest and easiest method of commanding the waters of the earth to do the bidding of man in the fields of cultivation. This is of vast importance in this district, named, and rightly so, the Dry Belt, where irrigation for the most part is carried on in a more or less primitive and uncertain fashion, by a dependence on winter snows and fortunate spring rains. Conserving and relying upon such waters, while doubtless adequate if Dame Fortune smiles, is at once precarious and not to be compared with a supply of moisture in all quantities, at all times and with a source of supply regulated as it were by a simple touch of the button.

To make water ascend the gentle slopes and on to the excellent bench lands, then, I am convinced that mechanical pumping by electrical means is the key to bigger crops, less worry and, withal, expenses down to the irreducible minimum. The effect on crops at the critical spring period when dependence on gravity water supply is tempered with the fear of a shortage at a later and hotter date, is easier of understanding than description. The advantages of good spring growth are reflected in the more lucrative prices obtained in an early market. This early market is assured when the water supply in the spring is right and continues to be right until the crop is harvested.

Some very interesting figures as given out by the Dominion Experimental Farm at Lethbridge, covering a period of seven years, 1908-1914, wherein will be observed an increase per acre on irrigated lands; Wheat, twenty bushels; Oats, forty-two bushels; Barley, thirty-nine bushels; Potatoes, two hundred and fifty-nine bushels. The tests were taken in comparison with non-irrigated lands in the same locality. These figures should be borne in mind when the subject of initial costs have to be weighed, incident to the installation of an electric pumping plant for it is here that the cold benefits represented by so much cash increase warrant the use of up-to-date means for irrigating purposes.

The following figures will give an accurate idea of the comparative cost to irrigate one hundred acres using one acre-foot per season for every ten feet lift:

Gasoline at 27c will cost 98c per acre.

Distillate at 22½c will cost 81c per acre.

Electricity at 1½c per kw., 50c per acre.

These figures, of course, speak for themselves, but, added to the cheapness of electric power are other important factors, flexibility and reliability.

No matter how prosperous a farming community may be, there is bound to exist the problem of financing, and, realizing the delicacies that beset the thorny path of solution to this question, I do not propose to weary you with any amateurish schemes. But, I do wish you to carry away with you the idea that the Hydro-Electric plant is surely capable of supplying the power adequate to compel any quantity of water in this district to go wherever and whenever it is required, once the necessary pumping equipment has been established. To my mind, however, those burdensome initial expenditures may be considerably modified either by adopting the community plant plan, or by bringing pressure to bear on the Government for the desired aid by loan, or such other manner possible. The extension of irrigation on modern lines in this district should be uppermost in the mind of every man of the land, for it is only by continual agricultural development that this great and glorious Dominion may retain for itself the proud title "The garden of the Empire." (Applause.)

MR. J. H. WOODWARD: Mr. Chairman, I would like to put before the speaker the estimate he has given on that fifty cents an acre-foot and ask what height does he lift the water at fifty cents an acre? He has given the cost of gasoline and distillate but he has not given the cost of heavy oil and heavy oil is very near one-third cheaper than distillate or gasoline, so that I think his estimates are a little out. I enquired for his estimate and got them for the summer at 2½ cents, but even at 1½ cents the cost is a little higher than crude oil. I figure that instead of 50 cents an acre-foot, by allowing 2½ horse-power to lift an acre-foot, it will cost 84 cents instead of 50 cents. I think his figures must be out. I do not suppose there is time for discussing that but I would like that taken up with Mr. Tedder.

CHAIRMAN: I would suggest that you should take that up with Mr. Tedder direct. He has had to leave, unfortunately, immediately after delivering his address. I think the Secretary has some announcement to make.

MR. RANKIN: (Reads interesting war bulletins just received off the wires which were received with great interest.)

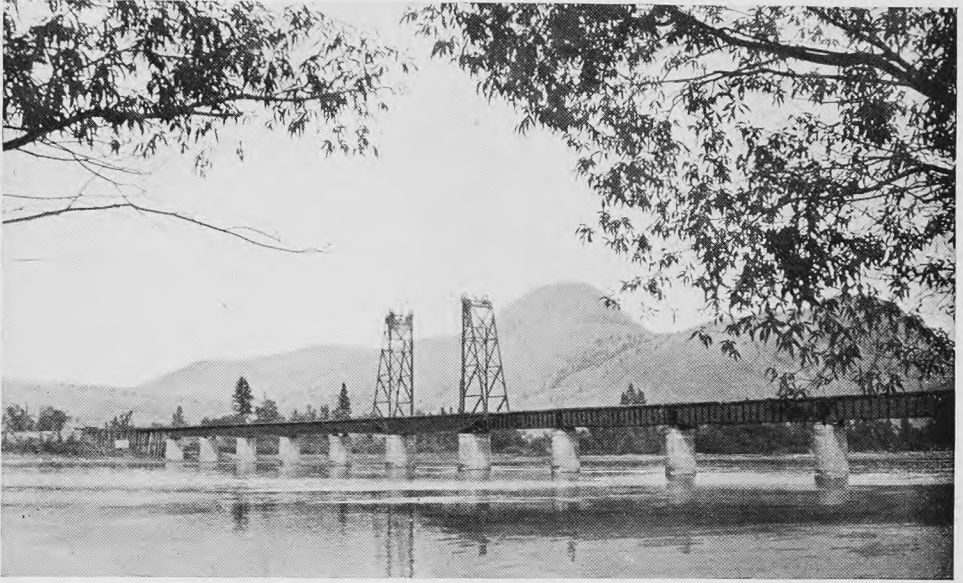
CHAIRMAN: The next item on the programme is an illustrated lecture by Professor W. S. Thornber, State College of Agriculture, Pullman, Washington.

While the lantern is being placed in readiness, Miss Brown, who entertained us so well this morning, has kindly consented to favour us with another solo.

Miss Brown then entertained the convention by singing "Good-Bye Summer." (Applause.)

PROFESSOR THORNBUR: It is with real pleasure that I again return to your beautiful town of Kamloops. Several years ago I was permitted to make a careful

study of your agricultural possibilities, and am certainly pleased to note the splendid progress that your community has made since my last visit. It is always a pleasure to meet with you people and consider together the real problems confronting the farmers, because we always get something of real practical value from our conferences.



Canadian Northern Railway Bridge over North Thompson River, Kamloops, B.C.

WATER A FACTOR IN COMMUNITY DEVELOPMENT

The subject assigned to me is one that bears close relationship to every factor in the final development of a community and the earlier and more thoroughly all these factors are considered nearer perfect development will the community have.

The growth of a community is an evolution of the largest kind and final development must not be expected in a year or even ten years. In fact our most successful communities have been developed out of a series of very radical changes. Rarely or ever does a community start at once in the developing of an industry that remains the principal industry of the community. The history of the evolution of some of our most successful agricultural communities shows that their principal industry at the present time is the result of a series of misfortunes and failures, and while man thought he was the deciding factor he has proven to be only an incident in the development.

If a community would be successful it must early in its development learn the true meaning of co-operation. Community co-operation means more than the mere getting together of a few of the good business men of the town. This co-operation must include not only the business men, the teachers, the preachers and the farmers, but also the wives of these men. Every person must be interested in some way or

other or the best results cannot be attained. It is absolute folly for a few men to endeavour to bear the load of a community when all are to be benefited by the development.

There are certain factors essential to every real live rural community and while some have apparently made progress without all of these factors being considered, it is interesting to note their deficiencies.

I have in mind a community that is famous for its Percheron horses and colts and what wonderful animals they produce. Their barns show that the people are interested in horses, but their school houses are a disgrace even to the poorest of communities and while they have won many prizes on horses and colts, no one has ever heard, outside of their immediate neighbourhood, of their boys and girls.

I would like to submit seven factors as a community measure and while I may not place them in their real order of importance, yet I am sure that they will be worthy of consideration. I maintain that these factors govern the possibilities of an agricultural community.

1. The Productivity of the Soil.
2. Market and Transportation Facilities.
3. Good Roads and Streets.
4. Good Schools and Churches.
5. An Intelligent Reading People.
6. Suitable Parks and Recreation Grounds.
7. Pleasant, Comfortable, Beautiful Homes.

A careful study of these factors will show the ideal in rural life, however—not the imaginary unobtainable, but the possible which must exist for the best conditions.

The productivity of the soil very largely governs the land values. It especially does when taken into consideration with the market and transportation facilities, and there is a close relationship existing between land values and the class of farmers coming.

The improvement of the roadway must mean more than the grade, drainage and surface. It should include the roadsides and road plantings. In many districts noxious weeds and destructive pests are religiously fought in the fields and unmolested along the roadsides.

If climatical conditions will permit the planting of nut trees along the roadside no better investment can be made to the adjoining farms. If roadside tree planting is not feasible, then by all means utilize the land with a clover, alfalfa or other hay crop and make that land as profitable as the balance of the land. It has been said that high-priced lands attract highly successful farmers while low-priced lands means many failures. While it is possible to measure the productivity of the soil, so much depends upon the intelligence of the operator that in reality this important factor becomes secondary.

The market and transportation facilities have become the most important of all factors. It is useless to produce a crop for which there is no market or even worse no transportation facilities. Most farm crops cannot walk to market, but must be hauled and, while a certain locality may have the most favourable conditions possible for the production of apples, wheat or corn, if transportation facilities are not good then it will be better to produce hogs, cattle or horses, a crop that may be driven to market rather than a grain or fruit crop.

The market problem is a keen one and must be given consideration or failure is sure to come. It is not a problem for the producer to solve alone, but it is one in which we are all interested and solution will come only when townsman and countryman co-operate in this problem.

The progressiveness of a country can most accurately be measured by the roads. Good roads at all seasons of the year are an unmeasurable asset to every farm served by them. This means that the crop can be marketed when prices are best. It likewise makes possible the utilization of the teams for general hauling at a time when they are usually idle. In addition to assisting in the marketing problem, good roads are doing more to solve the rural social problem than all other factors combined.

The schools and churches of a community must be so closely related that their activities will perfectly co-ordinate. Both institutions must be educational as well as character builders. Personally, I can see no reason why ancient history or literature taught in a Sunday school by the same teacher or one equally as good as teaches in the day school should not be given credit in the regular school work.

Education is education wherever you get it and the sooner we get away from the belief that culture only comes from the study of those things that were written about generations ago, then the greater will our progress be.

Too often we elect a school board, instruct them to employ teachers and figuratively say, now we have done our duty, you do yours. What do you suppose would happen if all of the parents were interested in the men and women who are teaching our boys and girls. I wonder what would happen if some of our school boards were requested to see to it that our boys were given training along lines that would make it easier for them to earn an honest living after school years, and that our girls were given instruction in home economics and that instead of turning out from our schools men and women who are not prepared to do anything specially we actually equip these young people for something useful.

If our big crop and best crop is boys and girls, let us never lose sight of this one fact and let us prepare it the best way we know how. Let us quit trying to make preachers, lawyers, doctors and teachers out of material that is intended for farmers, mechanics and housewives. Let us see to it that all industrial activities are represented in our schools.

Now that people have passed that period of belief in many places that the pastor was different from other men and agree that the church can profitably be used as a community centre, our religion is going to serve a purpose to man.

I never could understand why anywhere from \$3,000 to \$40,000 and \$50,000 should be tied up in a church building in a community for the use of from 25 per cent to 30 per cent of the people, six to seven hours per week. It is poor business. No firm, however wealthy, could afford to do it, and yet we find a few churches doing this very thing yet and wondering why they have not the support of the entire community.

The church should be a part of the community. Its Sunday School, Young People's Society, Ladies' Aid and Business Men's organizations each have a great field of work and when properly incorporated into the community eliminate laws, ordinances and influences absolutely detrimental to the good of civilization.

One of the most difficult problems in community work is to get people generally interested in profitable reading. This is especially true of rural communities. Rural activities during a part of the year on account of out-door exercise tires the body and, in a measure, unfits the system for deep study. However, by careful planning and proper presentation, interest can be created and marked results secured. Extensive use should be made of the governmental and college publications. Closely affiliated with reading is the problem of community lectures, musical programmes and other entertainments. With the introduction of extension services into our college activities many communities are availing themselves of the privileges of this work and hundreds of lectures, addresses and moving picture entertainments are annually being held as a result.

The great American problem of making more money has so thoroughly permeated the people that we have almost forgotten how to play. We don't play enough and when we do play instead of all taking part in the game, we hire a few professional baseball players, pay a fancy admission price, sometimes bet our money on the game, and watch them play. This is not recreation; it is "spendation," and the players get the exercise and the money and what do we get?

Our rural recreation parks should have the following factors:

1. Central hall for indoor activities, contests and exhibits.
2. Play ground for outdoor fairs and sports.
3. Picnic grounds for picnics, camp ground, etc.
4. A swimming pool wherever it is possible.

The evolution of the rural fair has reached the point where it is little better in many places than a carnival company with every form of game of chance possible. Is it possible that the rural folk can no longer enjoy themselves without balloon ascensions, gambling accessories and fixed horse races? Are we no longer interested in the best products of the farms and the true skill of rural folk? Why isn't there just as much skill in ploughing a nice, clean, straight furrow, showing a fine team of draft horses, sowing broadcast by hand a patch of grain or cradling a swath of clover or alfalfa as there is in doing some of the stunts we now try to do?

If you must throw baseballs at the negro babies or toss croquet balls into tilted beer kegs, let us not sell the concessions, but do this under the management of the fair and leave the money for the betterment of the community.

The recreation should be broad enough to include all classes and ages of the rural folks and the completed plan must take into consideration perfect manhood—mentally, morally and physically.

While the community is the unit of the state, the home is the unit of the community and without good, pleasant homes, no community can progress.

Country houses are too frequently built without consideration as to their surroundings or use. They need not be large, but they should be on good lines properly painted or stained, well lighted and surrounded with grounds in keeping with other rural considerations.

Finally a community should select a series of crops that will work well into its activities, soil conditions and water supply. These crops will depend largely upon the market conditions, transportation facilities, climate and likes of the people.

Some parts of the community will have land not adapted to regular crops. This land should be utilized to the best advantage with pasture crops. If grass will



Miss Jessie Brown, Soloist at the Convention

not grow, it is possible that fall rye will. If alfalfa cannot be established as a regular crop, it may be advantageous to transplant one or two-year old plants as it has been found necessary in some other dry parts of the States.

Professor Thornber then proceeded to show a series of very interesting slides depicting the development of a community from "bunch grass" to homes, and especially showing the utilization of water in community growth.

CHAIRMAN: The next item on to-night's programme is not definitely stated on the printed cards. On behalf of the Executive I am to present Mr. Rankin, who has been our Permanent Secretary for some years, with a small token to carry with him. (Applause.)

In making the presentation of a cigarette case and match box which had been subscribed for by the members of the Executive, the Chairman stated that it was a slight token in recognition of the esteem in which Mr. Rankin, now Lt. Rankin, is held by the members of the Executive, and their appreciation of the valuable work he has done for the irrigation association since the time he became Secretary; at the same time, he expressed the regret they all felt owing to Lt. Rankin severing his connection with the association temporarily. On behalf of the Executive the Chairman wished Lt. Rankin every success in his military career, and the best of good luck and said that he felt sure that before the return of Lt. Rankin we should hear of his earning distinction for himself and his battalion.

MR. RANKIN: Mr. Chairman, Ladies and Gentlemen,—I am sure I cannot properly express what I feel for those kind words and this present and what I feel from my connection with these conventions. I can look back to four or five conventions now, each one of which has been a greater pleasure to me than the preceding one. First, I think of Kelowna where I made some very good friends. Then we moved down to our province, to Lethbridge, and then to Penticton and from there to Bassano, and now we are back into old British Columbia again, as you call it, to the city of Kamloops, and I seem to have covered the ground pretty well and I think it is about time that I was ready to get into some other kind of work. We all have our own ideas and views of this present war and it seems to me that after having waited two years and being strong and able to go, it is up to me to do bigger things. I feel that if I have the good fortune to go to the front that the association will be able to go along without me and when I do come back you may be sure I will associate myself with this body. As you perhaps know, there have been others of this association who have gone to the front. I remember at this time, Mr. W. C. Ricardo, who, when I first joined this association, was one of the first members. Then from this city we have Mr. Arthur Chamberlain. I met him in Victoria. He has enlisted in the country or the Coast as a private and he was feeling very much elated at having been able to enlist. Then, we have Capt. Dufresne, whether he is at the front in France, or in England, I do not know. Then we have Dr. C. W. Dickson. It is quite possible that we irrigationists will meet over there and you may be sure that if we do there will be many pleasant memories called back and we will talk about the meetings we have had here. I have even now in my pocket a little token which was given to me at Kelowna and except for a few dents in the

corners it is sound yet. I will be able to lay this aside now and leave it with my wife when I go away and take with me this later token. It has given me great pleasure to work for this association and when I come back, it will give me as much pleasure as it has in the past.

Three hearty cheers were then given for Lt. Rankin.

WEDNESDAY MORNING SESSION, JULY 26, 1916

CHAIRMAN: This morning we have four good papers and this afternoon we have an invitation to go to Tranquille so we will have to keep very much to our programme in the matter of time. I will first of all call upon Mr. W. T. MacDonald, of the Live Stock Branch, Department of Agriculture, Victoria, B.C., to address you.

MR. MACDONALD: Mr. Chairman, Ladies and Gentlemen,—It is a pleasure to be present at this convention. All yesterday and to-day I have been enjoying myself very much indeed. Just one thing has given me some annoyance. I notice on the walls the statement that the Garden of Eden was an irrigated farm with alfalfa, etc. I do not believe that, because if Adam had an irrigated farm he would not have yielded to temptation. (Laughter.)

A few years ago when irrigated lands were being developed quite rapidly and when a good many new areas were being brought under irrigation, live stock farming seems to have been left out entirely. That was not only true in British Columbia, but in other parts of the country as well. I can remember very well one trip I made through the Yakima valley—the first farm institute trip I was on in that district. It was the most astonishing trip I had made. I could not figure out how there could be permanent agriculture without live stock. I think, perhaps, I said some things that were caused by the particular mood which I happened to be in at the time. Anyway, I made certain predictions expecting that some day they would come true, but they are coming true at an earlier date than I expected. Just three years since I went through the Valley again and I had one of the most interesting trips I was ever on. There were large numbers of farmers engaged in live stock. I remember one man asking me how I expected they could make money on dairy cattle and hogs with land they had paid two thousand dollars per acre for before it was developed. My answer to the question was that if you could make more money by a system of farming by cattle and hogs, than any other way, that it is the kind you should go in for. I am not saying whether you can make money off two thousand dollars an acre land or not. In a good many instances they have come to realize that that is the way they must look upon the situation. Unfortunately, a good many people who promoted irrigated lands have purposely left out live stock because they thought a good many people who might buy their land knew something about the value of live stock, but a great many more people did not know anything about fruit lands and they might believe something about fruits when they put their fictitious values on the lands. To my mind that is the situation.

Now we are getting away from that, and I think it was two years ago that live stock was seriously considered in our irrigation congress and on this occasion it seems

to be playing a very important part. The territory represented by this association is very varied, so far as types of irrigated farming are concerned. We have a very extensive country and have all conditions up to very extensive range conditions. Under irrigation with our favourable climate and soil, we get very large yields, but those large yields which we get under irrigation represent the taking from the soil of large amounts of fertility. Even orchard lands take a large amount of fertility from the soil and an apple orchard in full bearing will take as much out of it as thirty bushels of wheat. This is what Professor Thornber and I arrived at after discussing it for some time. We cannot go on without replacing in the soil some of it. The logical way is to feed some of our crops to our live stock and have it returned in the way of barn yard manure. In that case most of the fertility remains on the farm. Where we are selling butter and cream, practically all remains on the farm. We find in this province that the dairy industry has been recently making very large progress, particularly in the Okanagan valley. It may be of interest to some of you to know that last year in the Kelowna district fourteen silos were erected. A silo is a wonderful thing for that district, and, in fact, in all our irrigated districts, because we can grow so many crops suitable for the making of ensilage. In the Kelowna district corn especially grows remarkably well. There is nothing that is of so great assistance to the production of cheap dairy products as the silo.

Then we have alfalfa. With alfalfa and corn we have a wonderful combination for any live stock and I do not exclude horses. I remember, and Professor Thornber remembers it well no doubt, that the only way we could get people interested in alfalfa was to tell them it was good for horses. It looked as if they were interested in alfalfa. Alfalfa hay is a much richer food than timothy and we cannot feed it as we can timothy. You can fill a horse manger with timothy and the horse will not eat too much of it, but, in the feeding of alfalfa, we cannot feed him as carelessly as we can with timothy. Then, with alfalfa hay, we are feeding something out of balance, so far as nutritive content is concerned. We are feeding more protein than is necessary and we should balance the food we give to the horse. There is no reason for believing that timothy hay and oats are the only feed for horses. I have fed horses on alfalfa and other grains side by side with horses getting timothy and oats and have worked them just as hard and got equally as good or better results where I was feeding alfalfa hay.

Where live stock is being introduced on the irrigated farms, it is important that good live stock be secured. As I have mentioned, dairy cattle are very popular in our irrigated belts, but there are a lot of poor dairy cows yet, and the more we get of them the worse off we will be. The good dairy cow is a faithful friend that will give good returns for the care she receives. In laying any plans involving some new phase in our system of agriculture, we should look well to the future. We are too much given to be swayed by temporary conditions and every wind that blows. Sometimes we find that certain animal products are high. At the present time sheep and mutton are high in price and naturally everybody is interested in going into sheep. A few years ago, up until this year, we were doing a little more to encourage sheep production than we are doing this year, because we realize that it is a very difficult matter to get breeding stock and we also realize that people buying now are buying on a high market and unless very great care is exercised, they will meet with poor results, especially if the market for sheep declines and evidently

it will. We find that prices fluctuate, but for some years I do not think we will see such low prices as we have seen up to the present time.

In my work, we meet with many advisers. They come to us and tell us what we ought to do. One man was recently telling us some unpleasant things about the sheep industry. He said, "Why don't you get these people to bring in a lot of sheep?" I said, "I would like to do that, but where would we get them?" "Why didn't you start and talk this a few years ago?" he replied. As a matter of fact we did. We were doing it through the Provincial and Federal Governments but this man continued, "If I had been in your place I would have had more sheep in this province." I said, "About that time if you were in my place you would be wondering about the profits you could make in guinea pigs." That just about illustrates to you my idea. It is very interesting to have these people tell us what they would have done under the circumstances.

At the present time or just recently we have been trying to encourage the raising of horses and that has not been a popular move, although within the last month or so, many are beginning to realize that some of our predictions are coming true. There is every evidence to believe this now. As Dr. Rutherford pointed out to us yesterday, there is a very good market for horses. The kind to raise is the horse of size and quality, as the smaller horses are never going to command a high price. At the present time there is a demand for lighter horses that we have never seen before and I hope we shall never see again, because of the war. Look at the price on the boards to-day. Good work horses, farm horses, can be sold readily for three hundred dollars, some for more and our light horses, suitable for cavalry purposes, are far from reaching that price, even though we have at the present time such a demand for that type of horse. The same is true of the heavier farm horses. It is the horse that has been commanding the price. I know that in the Kamloops district there are a lot of people who have been buying up young horses looking to an early rise in price which will bring a handsome profit.

There is one thing that this exhibit here brought to my mind, and that is the possibility of raising alfalfa and other seeds. To encourage the production of alfalfa seed in the Okanagan, Thompson and Kamloops valleys, and probably other districts, the Department of Agriculture has purchased a clover hulling outfit which will be sent to different districts where alfalfa and clover is being raised for seed. A nominal charge will be made for threshing. Our reason for doing this was the great opportunity afforded on one hand and the great difficulty we have on the other hand in finding good clover seed free from weeds, and we know that we have enough noxious weeds in this province at the present time. I think we have nearly all that has been invented so far to-day, but we do not want to get any larger proportions than we have now. This is because we have large areas well adapted for the production of seed, so that we will be able to get not only more seed, for those areas, but a better quality of seed.

I should have mentioned in speaking about silos, a scheme that has been in operation for some time. We undertake to build the first silo and fill it in each community and that plan has resulted in doubling the number of silos in the province in 1915. During 1916 we expect to see a much larger number of silos than were built in 1915.

I have been glad of the opportunity of coming to the Kamloops district on this occasion. The Kamloops district is a district of interest to a live stock man and for the benefit of our visitors, I want to mention that on the 1st July, I attended a live stock show about six miles over the hills, and I want to say that that show was better than any other show in the province outside of Vancouver, New Westminster and Victoria. I say that without fear of contradiction and I have visited them all and the Nuxford show is the best with the exception of the three larger shows, although that show has only been held for three years. (Applause.)

The Kamloops district has been and always will be an important live stock centre. In some parts of the province where the range has been broken up into smaller farms, live stock to some extent has disappeared. Unfortunately, the prosperity of those districts has disappeared, but will return with the return of live stock. You will probably think that we live stock people are egotistical, but it is only a few years ago when we were almost ashamed to be in the live stock industry, but we are now having our innings and we have come back and this time we have come back to stay. Wherever live stock gains a foothold, there you will find prosperity and there can be no permanent system of agriculture which does not include live stock. In history there has not been such a system and we can only judge the future by the past. From every angle we look at it, it is the logical thing. In the Yakima valley I made the statement that some day the Yakima valley would be as famous for its live stock as its fruit and when that time came they would be raising more live stock than fruit. I think the Yakima valley is now bearing out that prediction as it has now become famous for its live stock district and that has not in any way interfered with its claim to being a fruit growing district.

I have used up the time allotted to me on the programme and after the address you listened to yesterday on the same subject given by Dr. Rutherford, I feel hopelessly lost in any endeavour I might make to follow the pace he has set and I do not think you expect it of me. I just wish to say to the people here and in British Columbia, that we are going to see a considerable development along live stock lines and I want you to feel free to call upon me for any assistance I can give you in helping the live stock industry in the banner province of the Dominion. (Applause.)

CHAIRMAN: I think that any one who is interested in live stock must be pleased to have such an ardent expression of belief in the live stock industry. We have heard so much about fruit growing for so many years past in this district that we began to think there was not so much to be made out of live stock as out of fruit; but, as Mr. MacDonald has said, we are coming back to the time when live stock is coming into its own again.

MR. JOHNSTONE: Mr. Chairman,—This is a subject close to what I am doing at the present time. I am a fruit grower and fruit growing has been my hobby. I have always kept more live stock than any one thought it good policy to do. When I started in first my neighbours were buying all sorts of chemical fertilizers. I bought more hay and stock. At the present time I have thirty acres under small fruit and keep generally, fourteen or fifteen head of young stock and a number of cows and also some sheep. I expect to have more sheep when I can afford to keep them. I have also twenty-five or thirty hogs and I have always found in cases where they have

rooted up my trees that I could put the tree in again and it would grow up and bear in two years. I have found, however, that sheep are better than hogs. One reason I brought the cherry branches to this convention was to show what can be done with live stock. I think fruit growers will grant this, that it is a bad year in British Columbia for cherries except in certain districts. However, you can judge for yourselves as to whether I had a poor crop. These are all from my own orchard where I pasture my sheep all year. I agree with everything Mr. MacDonald has said about live stock. I have not bought any chemical fertilizer since I have been in the business. (Applause.)

MR. WOODWARD: Mr. MacDonald mentioned the fact that alfalfa was an unbalanced ration for horses. I would ask his opinion with regard to dairy cows. Is it so good?

MR. MACDONALD: Dairy cattle require a different proportion, particularly dairy cows that are milking. They require a good nutritive in a different proportion to that required by a horse. In a horse we are producing energy. In dairy cows apart from maintaining the body, we are producing milk and we, therefore, require different nutritives for energy than we do for milk and alfalfa is the finest thing we can get for dairy cows, the best and cheapest.

MR. THORNBUR: I want to impress upon you folks what we are doing in Washington in connection with dairy work in conjunction with fruit work. I had to work side by side with Mr. MacDonald at one time and maintain that fruit growing was the only thing to do. We are, however, reducing our fruit work. We are producing better fruit and more fruit than we were producing on the entire acreage. One of the serious problems we had to meet was succulent food for the cattle. We are doing this and producing some 6 to 7 tons of carrots an acre. It shows the possibility of the small fruit grower on a limited area. We are cultivating alfalfa in the same way as we do other crops. We do not use it for ensilage. We use corn and other fodder for ensilage. I am particularly glad that the fruit growers are not losing their heads, but are gradually taking up and modifying another branch of agriculture which will result in better returns.

You know the price of hogs last year and what it was a few years ago and the price of horses twenty years ago. You also know the rush that so many have made to change and expect immediate results from some popular produce of the farm. Do not go to work and pull up all your fruit trees and go into grain, horses or hogs, but simply modify the problem as it is. Two weeks ago I had the pleasure of spending some time in Ontario and visited the big fruit farms in Hamilton and Winona. I was particularly interested in this. I said to the fruit growers, "You can go ahead and produce the fruit that will make the pies and the sauce, but," I said, "the fruit growers of the North-West"—and I meant Washington and British Columbia—"will send in the fancy fruit while you are working off your heads for the pies and sauce." They saw the point and took the problem in the same light. Poultry is receiving its share also. We have a great many large poultry farms in the North-West and they are doing well in conjunction with small orchard work and small fruit generally.

MR. MACDONALD: There is just one thing that I want to bring to your attention in order to consider it, not that I am able to say yet whether it is right or wrong. We were talking yesterday of the lack of reliable live stock statistics. In Australia, the owners are compelled by law to fill in a form which they mail to the Department of Agriculture or the Statistician's Office giving the numbers of live stock they have on their farms. I want you to consider the question of whether or not you think it would be well to have a law providing for such statistics and if you feel, after consideration, that it would be a good thing to follow out some such plan as worked out in Australia, I would be glad to take steps to see that we have such an Act passed in British Columbia. (Applause.)



Row of Six-year-old Poplars, from Seed (Irrigated)
Home Ranch, Fruitlands, B.C.

MR. WOODWARD: I would suggest that before the convention closes a motion to that effect be put before it to get an opinion of the members here. I think the suggestion a good one.

CHAIRMAN: If you will write your resolution out and get some one to second it and hand it to Mr. Peters, Chairman of the Resolution Committee, we can later put it to the meeting.

I think the time is up for that discussion unless there is something that any lady or gentleman may wish to say. There are a few things our Secretary wishes to make known and amongst them is the list of members who were present at the first meeting held in Kamloops in 1910. I would like the members whose names are read out to come to the platform and take their seats here.

MR. RANKIN: It is always interesting to look upon past conventions and follow those men whom we might call ardent in this cause. In the list I have taken

from our 1910 report there are several names of members who are here to-day. I would like to read the names of those I have here and if there are some whose names I do not read I wish they would come to the platform. Senator Bostock, E. M. Carruthers, A. S. Dawson, W. H. Fairfield, Fred J. Fulton, E. B. Knight, C. E. Lawrence, A. E. Meighen, J. T. Robinson, John F. Smith, E. C. Thrupp, James White, R. M. Winslow.

The following members then took seats on the platform:

SENATOR BOSTOCK, Ducks, B.C.
E. M. CARRUTHERS, Kelowna, B.C.
A. S. DAWSON, Calgary, Alta.
W. H. FAIRFIELD, Lethbridge, Alta.
C. E. LAWRENCE, Kamloops, B.C.
JOHN F. SMITH, Kamloops, B.C.
E. C. THRUPP, Kamloops, B.C.
JAMES WHITE, Ottawa, Ont.
R. M. WINSLOW, Victoria, B.C.

CHAIRMAN: I will now call upon Mr. Auld to address the meeting.

MR. AULD: Mr. Chairman, Ladies and Gentlemen,—I have lived for a good many years in Saskatchewan and always felt quite satisfied with our sunlight. But, this morning we have had a very remarkable surprise here in that I, along with the other gentlemen from Saskatchewan and Alberta, have been given a distinguished place in the sun.

I am very glad indeed to be at this convention this morning. I am sorry that my Minister, Mr. Motherwell, could not be here at this time. He has just finished a five weeks' tour with a better farming train which is making a tour of Saskatchewan and he felt that he could not afford to be away from his office any longer.

Irrigation in Saskatchewan does not hold the place that it does in Alberta and British Columbia. That, perhaps, is our misfortune. We had a very distinct misfortune in 1914, when, you remember, a large part of our province failed to produce a crop. We are glad to say we made up for that in crop last year when our province, I think, produced half the wheat crop of Canada, besides a large crop of oats and other cereals. However, we realize the importance of irrigation in any system of agriculture.

We are very glad to know that so many of the irrigators from Saskatchewan are here to-day. Down in the Cypress hills' region in the south-western portion of our province we have a large number of systems, none of them, however, comparable to the gigantic system of the Canadian Pacific Railway and other projects in the province to the west of us. The systems in Saskatchewan do, however, play an important part in the province and we look to a further development of them. What impresses us most in irrigation in our province is not the assurance which it affords of a crop, but the opportunity which it gives, to those fortunate enough to have the water, of growing a larger quantity and larger variety of fodder crops in order that they may engage in live stock farming. On a great many of the farms in Saskatchewan, grain growing is the predominant industry. It is only when live stock comes in and occupies a relative place with grain growing that the best agricul-

ture can be practised. We find in the older districts where live stock has not been introduced, such problems as noxious weeds, drifting soils and other things have been coming to the fore. After experimenting many years with noxious weeds on the prairies there is only one conclusion to arrive at and the only way to successfully combat the noxious weed problem is by having sufficient live stock and by varying our operations so as to grow more grasses and to diversify our farming operations. There has been a very marked tendency towards live stock farming in those districts in Saskatchewan where the natural conditions favour it. Running diagonally across our province from south-east to north-west and in the northern portion of the province we have a large area of prairie country and open spaces, abundantly supplied with natural pasturage and grasses, and in those districts live stock and dairying has made definite progress. The dairy industry while not on such an extensive scale as in the other provinces—in Alberta, for instance—is on a very satisfactory footing and in British Columbia we find a considerable market for our surplus products.

I do not think it was intended that I should occupy very much time this morning and I will only give a general view of the agricultural conditions as we have them in Saskatchewan. I bring you the very best greetings from the province of Saskatchewan and the regrets of my Minister, Mr. Motherwell, that he is not able to be with you and my best feelings that his absence made it possible for me to spend a few days in your delightful city and province. (Applause.)

MR. RANKIN: (Reads very interesting war bulletins to the convention.)

MR. LAWRENCE: The cars will leave from the Leland Hotel at 1.30 this afternoon for the trip to Tranquille. Owners of motor cars in this city and district have kindly placed their automobiles at the disposal of the convention and will provide transportation for the excursion thereby. (Applause.)

CHAIRMAN: I will now call upon Mr. F. H. Peters, Commissioner of Irrigation, Department of the Interior, Calgary, who is to address the convention on "Irrigation Districts' Acts." (Applause.)

MR. PETERS: Mr. Chairman, Ladies and Gentlemen,—This paper of mine is really not entitled "Irrigation Districts' Acts," but simply "Irrigation Districts," because in the paper I have not dealt except very briefly with the actual Acts.

Irrigation development in America has had its great boom—has had the great depression which always follows a boom, and we are now, I believe, rising again to the time of the more stable and economic establishment of irrigation.

I have chosen this subject because the passage of Irrigation District Bills in 1914 and 1915 in British Columbia and Alberta, respectively, seems to indicate the rise of newer and better conditions for irrigation.

I am sorry, Mr. Chairman, that an unavoidable lack of time has made it impossible for me to deal with the subject as fully as I think it deserves. I feel that this paper is not as complete as it should be, and, therefore, I trust that you will accept what I have to say merely as some observations which have not been very well worked out. One point I wish very distinctly understood, and that is that while I compare district development with company development, and while I indicate

that district development is an easier and more proper form of development, yet, I do not want to be understood as in any way criticising past company development, or any present company development.

It seems that perhaps times are changing from the old days when every effort was put forth to develop new agricultural areas, and that now the tendency is rather to improve old ones. I remember once at an agricultural meeting not so long ago, hearing the Minister of Agriculture for Alberta drive home his idea by stating that the problem we were facing was not to get more people on the land, but to keep those on the land who were there now.

I do not know whether conditions are exactly parallel in British Columbia, but in Alberta our first condition was that of having much vacant land which required settlement, and it seemed at the time that this land could be more easily settled if the farmer were provided with irrigation water. The early projects of this kind were obviously those for company development, because it required a company to raise the necessary capital to put the water on the land, and then create the organization to induce settlement. Now we have the very different condition of settled districts where the farmers have become established upon the dry, or perhaps partly irrigated land, and they want to get a good water right, so that by irrigation they can increase their prosperity over and above that possible under dry farming conditions.

I make no criticism, as I stated before, of company irrigation development, but looking to the time when our irrigation districts will want capital, and feeling that capital may, perhaps, be scared off by previous company difficulties and failures, I want to bring out some of the points to show how much easier is a sound development under the irrigation district plan than under a company plan, and how much safer investment, therefore, is in the enterprise.

Where conditions are healthy for irrigation district development the bulk of the land should be settled, and thus we are able to contemplate at once an irrigation district where that great force that never blunders—"natural selection"—has already hand picked the settlers. Or in other words, if you have a "bunch" of people in a semi-arid district that will "make it stick" under dry farming, there is no question but that they will flourish if you give them an irrigation ditch.

The essential basis of all irrigation district acts is well set forth in Dr. Fortier's letter published in a Report on a Public Irrigation Corporation Bill published by the British Columbia Government, 1914, as follows:

"The main purpose of district laws is to place in the hands of those who own land and use the water the management and control of the irrigation system, and to provide a method for securing funds to construct and operate works that are too costly for the individual or small groups of individuals to undertake. The district law provides a means of securing a water-supply independently of private corporations, whose officers and water-users seldom work in harmony, by selling bonds to obtain funds to construct new works or purchase existing works.

"Perhaps the chief benefit of the district law is to unite in one organization all the people of an agricultural community in such a way that each contributes his just share towards the expense of the undertaking, has a voice in its management, and a share in its benefits. These laws oblige those who profit by such undertakings to contribute something to defray their cost."

The strong features of the irrigation district are brought out in the quotation above, but I would enlarge upon them a little so that they will be clearly fixed in mind. All large irrigation developments have found that the greatest and most difficult problem to deal with is the human problem and this is undoubtedly easier to meet and deal with under the irrigation district idea than any other. Let me run over some of these problems as they are always found to exist, contrasting the conditions under company development and irrigation district development.

You see the success of an irrigation project depends first, last and all the time on the settlers. It is very different from a big industrial development where the certain class of labour required is always available to do a certain work for a certain wage, and where success depends primarily on efficient and wise management. In a case like this the management can control the worker, because they say "either do the work as we say, and for the wages we offer, or get out and we will hire another man who will." The farmer is a very different man—he is his own master and while the management can advise him they cannot force him, and they are absolutely dependent upon his making money in order that they can get their money out of him. So I say again—willy-nilly—the success of the irrigation project depends entirely on the success of the farmer, who cannot be driven like a wage earner and is very largely his own boss unto himself.

Now let me point out again how much more assured the irrigation district is of getting successful farmers than the irrigation company.

All the reasons I am going to give are so much interwoven that it is hard to separate them, but I have to do this to try and bring them all out.

Generally the company selects a tract of unsettled land which they buy up and propose to improve by the construction of irrigation works and then sell again to settlers. And just think what a lot of responsibilities they have to shoulder. They have to estimate on a myriad of features all of which might be included under the head of feasibility if you give this word a very wide meaning. But we will start from the top, or the bottom, whichever it may be, and catalogue some of the questions.

The company gets reports on the climate, the topography, the soil, the general surroundings, the crops that can be raised, the prices that they will fetch, etc., etc., etc. Now they propose to bring in settlers from probably all over the world to settle on the tract. I have no doubt that the man who comes up, perhaps from Nevada, thinks, after reading the prospectus or meeting the agent, that he will like the climate and surroundings in British Columbia or Alberta, but the prospectus and the agent very often paint conditions in a very rosy hue on the one hand, and on the other hand, far fields always look green. So the man or his wife when he gets here may find that he does not like the climate—Who is to blame?—the company—and the most deadly seed of dissatisfaction is sown.

The company considers the cost of preparing and working the land, the crops that can be raised, and the price they fetch, and then boils these down in some palatable financial summary. They set the price of the land and the annual water rental against this, and the difference is the potential prosperity of the settler. But, mark you, this is in the prospectus. No doubt the company's engineers or agriculturists are sincere in their estimates, and perhaps the figures have been approved by equally sincere government men, but all the same, these men may not be practical farmers,

they may not have sufficient information, or they may be somewhat biased in their desire to see the project and the district as a whole get settled up and go ahead. So the settler after a few years work may find it costs more to prepare and work the land than was estimated, the crops may not produce as expected, and worst of all the prices may go down. Who is to blame? Can you guess?—the company—and the most deadly seed of dissatisfaction has taken root over the whole project.

Now I have not exaggerated very much in saying these things, and it is very obvious how they are all done away with in the irrigation district.

In the irrigation district the land is mostly all settled, and the fellow who does not like the country has already moved on to sunnier climes. The settlers already on the land know what it is like; know what crops can be raised; know what prices are, and probably know from other irrigation developments in the vicinity what the irrigation water will produce. Now this man has a very good idea when voting day comes whether it is going to be a good thing to pay the price for the water, or whether it is not, and he is not so liable to err as the engineer, who has to estimate on everything. And, if later on the settler does find out he has miscalculated a bit and things are not as rosy as he thought they would be, who is to blame? Himself—not the company, and what a difference this makes. This man will say to himself, “well, it’s my own fault,” and he’ll buckle down to make the best of a bad job, and probably find out in another year or so that things are not so bad as he thought. The other, the company man, no matter how good a fellow he is, is liable to spoil his disposition and his work by always saying, “this is the company’s fault.”

Now let us go on to the operation end of it. All the engineers I know who are operating company canals vary in degree from being entirely grey to having grey hairs showing up behind their ears, and all the farmers I know who have been under their canals say that they are paid by the company to always give the farmers water just when they don’t want it.

I know water masters elected by irrigation districts who, while they have a very wide and strong vocabulary are still young men, and the farmers tell me, “Well, he don’t always give us water when we want it, but I guess he does the best he can.”

Now I have tried to explain to you in this sketchy way what a big factor the human element is, and how much better it is worked out under the irrigation district than under a company project, which I have taken as representing all other forms of development, including government projects which I hesitate to mention at all in this paper, because they have even greater difficulties than the company projects.

Now, to finally drive this home, I will quote again in part from Dr. Fortier:

“The main purpose of district laws is to place in the hands of those who own land and use the water the management and control of the irrigation system. . . . The district law provides a means of securing a water supply independently of private corporations, whose officers and water users seldom work in harmony.”

I started out saying that I would try and bring out some points indicating the advantages of the irrigation district, but I have really only dealt with the greatest point, the “human element”; and it seems to me that this point is worthy of the fullest consideration. It is unfortunate but true that whenever we want to start any big enterprise we have to go to the banker, and the banker won’t lend his money

until he is satisfied on every score. I hope that in the future bankers will be sufficiently interested in irrigation to become posted on its development, and when they do this I believe that the question of the human element will loom large with them. I feel sure that in the future, the well posted banker, after he has received every assurance concerning the security of the water supply, the adequacy of the works, and all these things, is going to say, "Your explanation is not complete. You have shown me that you have the water and the works to conduct the water to the land, and you have shown me that you have the right kind of land and the right kind of climate, but, in between these two stands the settler—neither the water or the land is any good without a good settler. Now show me where you are going to get the right kind of settlers to put on this project." It seems to me that if we can take this banker or his agent out and show him the bulk of our settlers already on the land, why then, the last doubts must vanish from his mind and capital will be forthcoming.

After making the, perhaps very strong, statements that I have about irrigation districts, I think that to play safe I should answer the question which some one will surely ask me, "How is it that so many irrigation districts have proved to be failures in America?" My answer is that I have been talking about districts formed under good irrigation districts' Acts, and practically every failure in America of a district has been due to their formation under a bad irrigation district Act. And I would say here, that the British Columbia Act (The Public Irrigation Corporation Act) while it may have its detractions, is in my opinion a good Act, and provides as fully as possible against the faults and errors that have developed in other places.

California is the leading State of the Union for irrigation districts, and has had probably the most disastrous failures in irrigation districts, but always the fault of a bad Act, and speculative development. The Wright Irrigation District Law was passed in California in 1887, and was undoubtedly a bad Act, which is not surprising as California was seething with speculation in those days, and the only precedents available were the Utah Acts of 1865 and 1884, which could hardly be classed as good Acts. Under the Wright Act, 49 districts were organized, and only 8 of these are now operating. But against this California amended its Act in 1897 and again in 1909, and since the first amendment no irrigation district organized has defaulted in the payment of either principal or interest of any bonded indebtedness. It is true that these only comprise 9 in number and these are not all operating, but they are all understood to have a successful outlook.

The data I have quoted regarding California is from Bulletin No. 2, "Irrigation Districts in California," by Frank Adams. This bulletin I think makes very clear the distinction I have drawn between good and bad Acts, and may be obtained from the U.S. Department of Agriculture, or the California State Department of Engineering.

There are a number of specially important points which should be looked after so that the welfare of the irrigation district be properly protected. These I would catalogue as follows:

1. The adequacy of the water supply must be ensured.
2. The plans must be complete, and properly approved, so that it is definitely known what land is to be irrigated, and how.

3. The estimate of the cost of the works must be complete and properly approved, so that the financial conditions are not misrepresented.

4. The right and value of the vote must be so fixed that the majority will represent the established substantial interests in the district.

5. The sale of the bonds or debentures should be carefully supervised.

6. The proper expenditure of moneys raised should be carefully supervised.

The careful treatment that has been given in the British Columbia Irrigation Bill indicates that the first four points, viz., water supply, plans, estimate of cost and the right of vote are amply safeguarded.



Home Ranch (Irrigated), Fruitlands, B.C.

It seems to be the opinion of men in the United States who are particularly well qualified to speak on this subject, that a minimum price should be fixed at which the bonds or debentures can be disposed of. This is so because when the cost price has been ascertained, and debentures are voted on, the voters naturally assume that the debentures will realize their face value, or some other price which may have been estimated; and if the sale price is materially lowered, then the relative cost price is just added to the same extent, and where the difference is very material it may add a considerable debt on the district, without the voters realizing what they are doing. However, the answer to this is that no other corporation is limited as to the selling price of debentures, and that if this is done with the irrigation corporations, it might seriously hamper them in their financial dealings.

Experience in Colorado has proved that all the provisions which were enacted there in this respect could be "beaten" in some way or another if the men in charge of affairs wanted to do it, and so no doubt it is wise to leave this to the Trustees and rely upon their business ability and honesty.

Experience in the United States also seems to indicate that a close supervision of the expenditures of the moneys raised, particularly on the large construction work, is very desirable and the tendency is to make this the duty of the State Engineer, whose position is most nearly like that of your Comptroller. The efficacy of this plan depends entirely upon the ability and activeness of one state or provincial official and, in my opinion, the responsibilities in this respect are very properly placed by your irrigation bill on the Trustees and the Board.

To sum up these features, and as has been pointed out by Mr. Grunsky, all the questions that arise resemble very closely those arising in a city or municipality, and the procedure of dealing with these questions in very much the same manner as in cities and municipalities, the practicability of which has been well tested by time, seems a very wise provision.

The Irrigation Districts' Act of Alberta is not, in the speaker's opinion, so complete an Act as the British Columbia Act, or perhaps as is desirable. The fact, however, that the authorization for construction and the water license must be obtained in accordance with the provisions of the Dominion Irrigation Act ensures the adequacy of the water supply and the completeness of the plans. The Alberta Act stipulates that the loan raised to construct and complete the proposed works shall not exceed \$25.00 per irrigable acre, and that the amount required to be raised annually for maintenance and operation shall not exceed \$1.50 per irrigable acre. It seems to be clear that this feature must be carefully scrutinized by the Dominion officials before authorization for construction is granted, and so further assurance in respect to the estimate of cost and financial conditions, over and above the responsibilities of the Trustees, is gained by the subjection in this respect to the Dominion Irrigation Act. As regards the right and value of the vote, the sale of bonds, and the proper expenditure of money, the same remarks that have been made concerning the British Columbia Act are applicable.

Now, ladies and gentlemen, in conclusion, admitting the scarcity of capital which we must expect for perhaps the next decade, I believe that the outlook for irrigation district development is great. Development upon the district basis should be sound enterprise. We have good district laws, and if capital can only be interested sufficiently to cause it to examine the conditions, I feel sure that it will recognize the excellent security offered by the irrigation district lands, and be prepared to loan the necessary money. (Applause.)

CHAIRMAN: On our programme we have not allowed any time for discussion, but the paper of Mr. Peters is so interesting and he has placed the matter so clearly before us that if any person wishes to discuss this paper I think we are entitled to take a few minutes in doing so.

MR. WOODWARD: Mr. Peters in speaking of California has stated that a great many of the associations down there have failed. I have collected considerable information on irrigation associations in California. I find there have been some two hundred projects which have been drawing water from wells from 100 to 250 feet deep. Was it these companies that failed or was it the ditch companies? The cost of irrigating land from deep wells averages \$15 an acre; for the shallow wells it averages \$5 to \$10; that is for an acre of land for the season. Of course,

California being a warmer climate the soil naturally requires considerable water. These being high prices, would it not be these companies that failed? I would like to compare notes with Mr. Peters in this respect.

MR. PETERS: I am really not fully posted upon conditions in California, but I am pretty sure that the companies I speak of as failures, were not well companies. They were diverting water from creeks. As I pointed out in my paper it was not through good district laws that these companies failed, but because there was a perfect orgie of speculative enterprise and if you read the history of these schemes they are ridiculous. Those that failed were really stupid schemes and were bound to bring about trouble. I do not think any of the companies though were bringing water from wells.

MR. WOODWARD: Is it possible then to irrigate from wells? If these wells had failed it would not be profitable irrigation. I have gone into the question of irrigation with wells and I have gathered considerable data from the United States. In Garden City, Kansas, the United States Government started fifteen years ago a reclamation project. The company took their water from the Kansas river and they have some 280 wells in that locality. Their wells are arranged in twenty-eight groups. They are driven by electric power derived from a central plant. At each of those groups is a pumping station. The ditches radiate a distance of two and one-half miles so that each station is five miles from the other. Under this system there was a short time ago, ten thousand acres under irrigation. The cost to the farmer is three dollars per acre for the year. According to the government scheme, after a term of years this three dollars an acre is supposed to pay for the plant and then the plant becomes the property of the land-owners. To go further south, to the States of Louisiana and Texas, including rice irrigation, there were 750,000 acres of land under irrigation. Now it has been maintained that water from wells is not so suitable for irrigation as it is too cold. I do not altogether uphold that. I think that after water is pumped from a well and run about one hundred yards on the surface it is plenty warm enough to raise crops. But, these people in the south use a great deal of water from the wells in preference to the water from creeks so that we may say, I think, that well water is suitable for irrigation. In New Mexico, I have not the amount of land under irrigation, but there is a great deal. At that place they cannot obtain electricity. They use gasoline engines. Of course, gasoline is an expensive fuel and oil fuel only runs about one-third the cost of gasoline. In wells that average from 50 to 100 feet deep, the usual cost is from three to four dollars per acre-foot of water. If they were to use crude oil, I think, and change their system they could do it for less. Gasoline according to our prices here is 34 cents a gallon. At the present time crude oil or heavy oil is only 14 cents; last year it was 9½ cents. In comparing the two as to power, there is more power in one gallon of heavy oil than there is in one gallon of gasoline as power is not derived from bulk, but from the weight per gallon. There are large tracts in Nevada and Colorado from which I have not had any information, but I was thinking that here in British Columbia there are large tracts of land where water cannot be obtained from creeks. Now, if sufficient underflow could be obtained to sink wells, why is it not profitable to sink wells in British Columbia or Alberta. I think that from the data I have

received it is well worth looking into and I would like to see this question taken up and gone into by the convention and also taken up by the Government. In New Mexico the estimated cost for watering 200 acres of land is \$2,000. On small tracts of land up to 40 acres, the estimate is given at \$25 per acre. Comparing the two you will see that the large plant is much cheaper. It works out at practically \$10 an acre for installing your plant, while the small one is \$25. I am sorry I have not any more definite information upon the subject, but if it has been of any benefit to the association or any one here, I am pleased to have given it. (Applause.)

MR. CRANDALL: I have listened with considerable interest to my friend with reference to pumping and other systems of irrigation in California and the failure of the large number of projects in that state. I have had the pleasure of living in California for something like twenty-five years and being interested all of that time in irrigation, and I have, therefore, some knowledge of irrigation conditions in California. In speaking of the failure of irrigation projects in that state, I may say that in the main they were very small ones, practically neighbourhood projects and the failure of them was caused by a very defective law which was placed upon the statute books and is known as the Riparian Rights Bill. Those laws were such that people below who had rights were given a relative position from the head waters of the ditch. In other words, if I occupied the fourth place on the ditch for taking out water, I could not take out water until my neighbour above had been served. For that reason very many of the projects got into difficulties and were failures.

With reference to pumping from wells. I am sorry I cannot go into the exact cost of using heavy oil, gasoline or electricity for pumping water and I presume the convention is not very much interested in that, but I may say that the pumping of water from wells in the valleys of California are usually projects in which not more than one person is interested. Most of the people in California handle water that way and are irrigating for themselves and using it only for their individual use. What they can sell they do so to their neighbour. I have done something of that kind, in fact, where the water was sold like that. With reference to the cost of pumping water in California, it has varied considerably. At first we used steam and coal power, then when the great oil boom of California came on, we made big contracts with the Standard Oil Company to lay down oil at 71½ cents a barrel of 42 gallons. We found that the pumping of water then was only a small expense and we could put the water on our orchard very easily. Do not think that, because a few projects failed in California it was any reason that irrigation was not appreciated very much. It was just the petty squabbles that we got into there, and we are getting out of them in Alberta and British Columbia. We are now making it possible in Alberta and British Columbia for every man who goes in for irrigation to receive absolute justice.

MR. CARRUTHERS: I should like to ask a question as one personally concerned. I have been mixed up in a company service and have had to take all the company's kicks. I believe in water municipalities. Mr. Peters said in his address that the settlers should form themselves into district municipalities or water districts and they would have less trouble amongst themselves. I think you must be referring more to Alberta than British Columbia. The point I make is this that in British Columbia

where we want water, we want it very badly and until water is to be had there will be no settlers. One company I represented for a number of years had seven thousand acres and two settlers on that tract. I was one. There was no water and a grasshopper could not live on the land. Until water was put on it you could not form a municipality. The same thing applies to the company I now represent. They have ten thousand acres and until settlers come on you can not form a water district. If no one is there to put water on it the land goes back to the company or the Government, neither of which you approve.

MR. PETERS: There is only one answer to that. Where you have absolute aridity and cannot get the settlers there until the water is there—then in that case you cannot do anything until a company does develop it. I was speaking of Alberta, because I know something of it. There is really none of that country, however, that you could say was absolutely arid. In practically all of the country a man can get a foothold without irrigation. I discussed this question with Mr. Fairfield coming up and I know that there are places in British Columbia where you have to have water and I think then that company development is the proper way, because I do not believe the Government will undertake it for many years. I do not take issue with Mr. Carruthers on that point. If you have the arid land, you must have water. I do not know anything about the conditions here, but I believe in irrigation so much that if you have arid land and there is always a hot sun along with it—provided there are no gross blunders made such as putting in a system where there is no water—I cannot see why the project should fail, because it seems to me that once the settlers get on they will make good on it.

MR. THRUPP: You cannot satisfy a banker unless there is some settler there producing something, but if a company takes up a district and provides irrigation they should at once set to work and irrigate the land themselves. The mistake made by companies here in this country is that having provided the works they left the lands unirrigated waiting for settlers to come in. The solution is to put the lands under irrigation and get fodder crops growing and get something produced and pay interest on their working expenses until settlers do come and if they do that they will get their settlers instead of having the land standing idle. Mr. Peters mentioned that in Alberta they proposed to limit the amount of money that should be spent upon irrigation schemes to \$25 per acre. That figure might be suitable for Alberta, but in British Columbia we should want a figure of over \$60 an acre permitted on some lands we have to irrigate. There is another point. With regard to irrigation districts, I agree with what Mr. Peters has stated. There is one point not dwelt on and it was brought up by Mr. Tedder's paper last night. Mr. Tedder told you that the city of Kamloops was ready to supply power to pump water on to the lands. But there is the financial difficulty. The municipality which undertakes to supply power has to find funds upon the security of town lots. It is an anomaly that capital should be provided from town lots to provide power for outside land. There are about forty people on the North Thompson who want electric power from the city and we cannot get it because the city is not in a position to borrow money and at the present time there is no legal provision that I know of that would allow the district to form a municipality and borrow money on the North Thompson. If some

provision were made for that there would be a better chance of seeing more power used than under present conditions. The capital for irrigation purposes should be raised upon the security of the land to be irrigated. If we do that, it would be quite possible for groups of people outside of the city to raise money to provide for the branch electric mains, transformer stations and distribution works. It would be a real step in having electrical power taken and used by those outside of the city in connection with their irrigated tracts. That is a matter which might well receive some attention from the Government. (Applause.)

MR. DAWSON: I am one of those unfortunate individuals that Mr. Peters refers to as having grey hairs before their time. A short time ago I was asked by a man putting in a field of alfalfa as to how much water he should use and I told him I could no more tell him that than the size of the shoes he should wear when he was twenty-one.

I have listened with interest to Mr. Peters' valuable paper and there is no question but that small schemes could be successfully developed along the lines of community development, but it is an acknowledged fact that the large projects can only be handled by either corporations or governments. The necessary machinery to successfully colonize, settle and develop large tracts can only be carried out along those lines as has been done in Australia by the Government and in Canada by the rapid transportation companies. The ultimate aim of those large corporations is, however, that after having colonized the lands and settled them with the proper men and put in the necessary machinery for operation, then the water users' associations will be formed and the operation turned over to the settlers, but that cannot be done in the initial stages. In the case of the Canadian Pacific Railway contracts, the contracts call for the formation of those district associations at such time as a certain proportion of the land is sold and there is no question but that it is the only way that the larger projects can be developed. Until the settlers are on the land in large numbers those projects can only be operated by the corporations or governments who constructed them. But as the lands are taken up and the proper class of people placed on them, the water users' associations can then be formed and fostered by the companies with every success. (Applause.)

MR. WOLLASTON: One thing we lack in British Columbia is a maximum, as they have on the prairie. If we had a limit set of \$25 or \$30 an acre, I would not like to go there. There would be more cattle if that were the case. I know lands under irrigation that would cost \$1,000 to irrigate for all the irrigation that is on them and they are going back to cattle ranches. If the land cannot be irrigated economically then it should not be irrigated. It looks as if some land could not be irrigated without governmental aid.

MR. LAWRENCE: The Chairman of the Local Board reminds me that last week we made an investigation of pumping plants and that should be placed before the convention. We think it is one way to solve the problem of irrigating the bottom lands.

CHAIRMAN: I have no doubt that the convention will be glad to get that information and we will take that up this afternoon or this evening. As this discussion

has apparently come to an end, I will now call upon Mr. D. W. Strachan of Tranquille to address us on "Mixed Farming." (Applause.)

MIXED FARMING

MR. STRACHAN: Mr. Chairman, Ladies and Gentlemen,—I recognize that I have the most difficult position of any of the speakers, because you are going out with me this afternoon and will see what I have been trying to do. If I were from Saskatchewan or Victoria I could tell you a lot of things and not be found out. I may say right now on behalf of the staff of the Alexandra Ranch that we extend a very hearty invitation to come out and see our place this afternoon. We are always pleased to see visitors out there.



Irrigation at King Edward VII. Sanatorium, Tranquille, B.C.

Mixed farming as an occupation has been almost entirely neglected in the West. In fact, in all new countries where pioneering has been done, and where land could be obtained for a trifle, it has been the custom to reap the fruits of the soil with as little labour as possible. The virgin soil covered by the vegetable deposit of centuries gave forth abundantly and scientific methods of farming were not required to produce good crops. This was true in Indiana, Illinois and Iowa, in the Dakotas, and again in our own prairie provinces. Hence grain growing became the favourite occupation of the farmer. He found that by ploughing up the sod, giving it a scratch with the discs and harrows and then drilling the grain, he could obtain very good crops and one man could put in 200 or 300 acres of crop.

The comparative ease with which this was done encouraged the farmer to strive for larger areas each year, and more and more slipshod methods were introduced. I can well remember in the early days in Manitoba, that when springs were late,

in order to get in the amount of acreage we would disc in the grain on the stubble. While this was something of a gamble such remarkably good crops were obtained sometimes that it encouraged the farmer to continue the system, which even in the present day is in vogue in many parts of Saskatchewan.

As a result of these methods the rich soil of the prairies in the older settled parts, has been depleted and infested with weeds, and the bumper crops, which were common in pioneer days, have become a thing of the past. The average farmer never thought of putting anything back on the land. It was a case of everything going out and nothing coming in; and the older districts are now suffering as a result, notwithstanding that much better methods are being employed at the present time. It is a fact that any system long continued becomes a habit and this is why the old timers found it so hard to adapt themselves to new conditions and adopt more modern methods such as rotation of crops. They had gotten into the wheat growing rut, and could not change to mixed farming which is the only solution to the question of worn out soil.

I once had the privilege of visiting a large packing house, where the guide explained to me that every part of the animal, from the horns to the hoof, was utilized; nothing was wasted. That is exactly the idea of mixed farming. There should be no waste products, everything can be put to some good use. One of the failings of our Western farmer is that he does not appreciate the stored-up wealth in his manure pile. I have seen the old timers let the manure pile up around their barns for years. I even knew one man who claimed that it was cheaper to move the barns than the manure. It is not until a man finds himself on a farm with depleted soil that he appreciates the full value of fertilizer. It is our custom on the Alexandra Ranch at Tranquille, to haul the manure every day and spread it on the fields, except for about three months of the year. During the growing season we are compelled to pile it, as we do not summer-fallow, and consequently have no land to spread it on. We have found this system works the best as there is less handling and less waste from seepage.

After the necessary expenditures for working equipment, such as horses and machinery, the mixed farmer should lay the foundation of a dairy herd. There is nothing which brings such quick returns on the farm. From the instant that he has purchased a good dairy cow the farmer has a source of revenue. She gives him not only the daily supply of milk, but also the increase. There is scarcely a location where dairying cannot be carried on with profit, as butter and cheese are concentrated foods and can be more easily transported than grain, hay or roots. This is particularly true in our own province where transportation from the farm to the nearest railway depot is always more or less difficult, and where the grain grower is at the mercy of the railway companies with their exorbitant freight rates. Another advantage is that the revenue from the dairy is divided over 365 days of the year, while the grain farmer has to wait until fall for his profits. Ready money means a great deal as the farmer can take advantage of all cash discounts. Profits and expenses go along hand in hand and he can tell his exact financial position at any time. Dairying encourages co-operation in the form of dairy associations and the interest is better kept up on account of the continuous profit sharing than is the case with the wheat farmer where associations thrive chiefly during the fall and winter months. Dairying is a very interesting business, but one which requires a considerable amount

of care and study. A farmer should use great judgment in picking his dairy cows, and after he has them, should keep a strict account of what they produce, so that he will be able to distinguish the producers from the boarders. At the Alexandra Ranch every drop of milk is weighed and a daily record kept of each cow during the year. By looking over these sheets we can readily tell which cows are paying and which are not. Some farmers imagine it would be easy to tell their good cows from their poor ones without keeping weight records. But this is not a fact. You would be surprised at the results. Some cows that you thought were very poor milkers will keep up a steady flow and at the end of the year will total up a very creditable supply of milk; while others that might be called spectacular milkers, who, for a short time after freshening give an abundant flow of milk, afterwards drop down and dry up long before the end of the year. Again, other cows will fluctuate so much from day to day that without a record one cannot tell where they stand. These last, however, are not a very desirable type. It might be interesting to you to know what our Alexandra Ranch dairy cows have produced during the last year. We have been keeping records for the past two years only, and therefore are just nicely started at building up a good dairy herd. One of our best cows produced over 11,000 lbs. of milk; three over 10,000 lbs. each; eighteen of them averaged 8,494 lbs. each; while the entire herd averaged 7,436 lbs. each. Some of these were only heifers with first calves. While a beginner must do the best he can with what he has, I do not think that the farmer who has been dairying for a few years, should keep any dairy cow around him that does not give over 7,000 lbs. in the year. Professor Gay in "Holstein Friesian," of recent date, states that the average farm cow gives about 3,000 lbs. of milk and 140 lbs. of butter in the year. Anyone can readily see that such an animal is a millstone about a farmer's neck, instead of a stepping stone to prosperity.

I do not think there is a better locality anywhere for growing the necessary food for dairy cattle, than around Kamloops. Under irrigation we can grow very heavy crops of mangels, corn, kale, grains and grasses. The question might be asked, "What kind of crops should a mixed farmer grow?" Besides the ordinary coarse grains, some kind of fodder must be grown which will supply good nourishing food for the whole year. Corn is one of the heaviest fodder yielders we have and is something that will grow well in any of our western provinces. True, it may not ripen in all localities, but it will mature sufficiently to give high food values. Last year we planted 10 acres of corn in hills 40 inches apart each way, and produced a bumper crop which yielded in the neighbourhood of 20 tons per acre. This made sufficient ensilage to feed our dairy herd for 9 months of the year, besides feeding some to our hogs, hens and range bulls. The cost of producing this was as near as we could estimate it, \$3.50 per ton.

Alfalfa is another important crop to the mixed farmer yielding five tons per acre and up in this locality. Last year our neighbouring rancher cut four crops from his old alfalfa fields. One farmer up the North Thompson river told me he sold 85 tons off thirteen and one-half acres. Now, when we consider that alfalfa is equal pound for pound with bran, we see the enormous amount of milk producing food which can be obtained from one acre. In seeding alfalfa it is very necessary that the land be thoroughly cultivated and a good seed bed prepared. As our land dries out very quickly after irrigation in the hot days of early summer, we have found

it advantageous to sow oats as a nurse crop, seeding about eighty pounds to the acre. We then sow about fifteen pounds of alfalfa seed to the acre, which is quite sufficient, though seed houses recommend as high as twenty pounds. We harrow it in with a stub toothed harrow so as not to bury the seed more than one-quarter or one-half inch deep. The date of planting should be as early as possible in April. This year we commenced on the 17th of April. We did not inoculate either seed or soil. We cut the nurse crop from the first to the middle of July according to the season. There are two reasons for this. First, it cuts off the young alfalfa plant, thus checking its growth and giving it a sturdier root. Second, the nurse crop is removed at a time when it is commencing to smother the young alfalfa plant. If the nurse crop is allowed to ripen it lowers the vitality of the young alfalfa plant or even completely kills it. Last year we cut the nurse crop about the 15th of July and after that had a very fine second crop of alfalfa.

Mangels and sugar beets are also very heavy producers and are excellent food for all kinds of stock. As a substitute for good pasture and as a milk producer they have no equal, but are more expensive to handle than other crops as they require a great deal of hand labour. Other good fodder crops for late summer and fall are rape and kale. I tried both those crops on the prairies, sowing them in broadcast on breaking, and found they did exceptionally well.

It is very important that all seeds be thoroughly tested before planting in order to know what percentage to allow for poor germination. This year we experienced great difficulty with our corn seed, some not germinating more than 20 per cent, and very weak at that. It takes very little time to test seed and well repays the labour put on it.

With your dairy herd established your next step is to study your soil to find what crops are best suited to it. Certain crops grow better on sandy soil, others on clay loam, and so on. By setting aside an acre or two of land for experimental purposes you can readily discover what kind of crops do best on your particular farm. This does not take much time and is both interesting and helpful. Your experimental plot can be marked off in tenth of acre divisions, and the different kinds of roots, grasses and grains planted in these plots. Here you can watch them and compare their productiveness and food values, and estimate how much per acre they will produce. This is an occasion where you can bring the Department of Agriculture to your assistance. Bulletins are published which give you the chemical analysis and food values of every kind of crop which a farmer grows. Bulletin 72 is one of the most useful and instructive of these government publications. After you have estimated the tonnage per acre of your different crops you can turn to these government tables and figure out their actual food values. By comparison of these values you can tell which crop produces the most in food value per acre on your farm. It is also necessary to keep account of what it cost you to produce these crops. This you may not be able to do very accurately, but you can make comparisons which will aid you in coming to a conclusion as to the cost of production.

We must not lose sight of the fact that the dairy cow, the beef cattle, sheep and hogs, are the factories which change the raw material that we have produced on the land, into the finished article of milk, beef, mutton and pork. If our crops do not contain the necessary raw material, in the proper proportions required to manufacture these finished products, we are not giving our living factories a fair chance.

This brings us to the balanced ration. By referring to our government tables we can find, on the one hand the food values of our crops; on the other hand the proportional quantities of proteid carbo-hydrates and fat, required by the animal to deliver the goods. It is very important that the stock breeder should know this. For example, if a milch cow is given food high in carbo-hydrates and low in proteids she will be compelled to consume too large an amount of carbo-hydrate food in order to get the necessary amount of proteid. She will do this, but the excess of carbo-hydrates will be largely wasted. This is one of the leaks that will reduce our profits.

Again, if we cannot manufacture these goods at a profit, we had better quit business as we are playing a losing game. It is a common saying, "If you want to get rich quick, sit down and figure it out with a pencil." Take the kid glove farmer or a real estate booster, and with a sharp pencil and a quire of foolscap, he can figure out more profits in farming in ten minutes than you can make in a lifetime. Nevertheless, while that class of men wear their pencils off too fast, the average farmer does not use his enough. The judicious use of the pencil is just as essential to the prosperity of the mixed farmer as are any of his farm implements.

A few sheep should be on every farm, varying in number according to the size of the farm. These little animals bring in greater returns than any other line, when we consider the small amount of attention they require. During the lambing season they need some care, but after that, if a fairly hardy variety is obtained, there is no further trouble, as they are good hustlers and will look after themselves. They assist in keeping down the weeds and will pick up the grass in the fence corners and along the road sides which would otherwise go to waste. They are almost worth their keep as weed-destroyers alone. We keep from 30 to 35 head of sheep on the Alexandra Ranch and they do not consume three tons of hay in the year. Our flock last year averaged us over 12 pounds per fleece. This in itself, at the present price of wool, is a very good income for the capital invested. Then they should have at least 100 per cent increase for the year and the small farmer who is not overcrowded with stock, can easily make this 125 per cent. One rancher, Mr. Cornwall, who keeps about 215 ewes, told me the increase in his flock this year was 135 per cent. The total receipt for our flock for 1915 amounted to \$431.81. From these figures you can easily see there is good money in sheep. Sheep in this country are not subject to epidemics or insect pests. Their only enemy is the coyote. Where these animals are plentiful they are a great detriment to the sheep business. Many remedies have been recommended but none are of much use except the coyote proof fence.

Hogs are another item of profit in mixed farming. There is always a certain amount of refuse from roots, grain and the kitchen, which can be utilized in the pig-gery, and a few hogs can always be kept to good advantage. They are something that require close attention as regards their feeding to know whether you are making or losing on them when kept in large numbers. It is absolutely necessary to have pasture, ensilage, and roots to supplement the grain ration. Young growing pigs do very well on alfalfa, pasture and rape, together with a little bran. The ensilage and mangels will take the place of the pasture in the winter season.

In discussing the profits to be made on different classes of animals we must not fail to recognize the importance of the sire in all of them. Some one has said that the sire was half the herd. I do not think that does the subject justice. He is much more than half the herd. It is surprising how quickly a herd or flock can

be built up by the introduction of a good sire. In a few years a very common herd may be built up to have almost the appearance of pedigreed stock. The pure bred sire will leave his mark on the offspring from the very first and overcome the undesirable qualities of the mongrel dam. Through years of careful breeding the good qualities of the sire have become pronounced and fixed in his physical make-up, while the mongrel dam, through years of haphazard breeding, has not that advantage, and her bad qualities, though many, are not so fixed in her nature. She has been bred backward and forward through different breeds and her faults are not inherited from one unbroken line of ancestry but are derived from a great many sources. Thus the pure bred sire, whose good points have been safeguarded and emphasized for generations, has these points firmly fixed in his nature and is sure to pass them on to his offspring. It is certainly astonishing how many farmers overlook this all important point in the breeding of stock. I really believe more money is lost to the stock breeder and the country at large, through neglect on this one point than any other. I would like to cite you two instances of this in my own experience on the Alexandra Ranch. One is in the case of rams. Our lambs in the fall usually dress from 70 to 90 lbs. Two years ago we purchased an aged ram which was all we could get though we knew it was not what we desired. As a result the weight of our lambs dropped 20 lbs. per head. From this you will see the great loss we sustained in the profit of our 30 sheep through this one bad bargain. On the other hand our hogs were a very ordinary bunch. We purchased a pedigreed Berkshire boar, and as a result our hogs have improved so much in appearance that one could scarcely recognize them as the same herd. The good results obtained from a pure bred sire can be very quickly recognized in sheep and hogs on account of the short time it takes these animals to reach maturity. Cattle and horses take longer to mature and show the benefits of breeding, but what has been said in regard to the smaller animals is equally true of them. The benefits of a good sire cannot be too strongly emphasized and the importance of this should be preached to the farmer day and night until he recognizes it, as his failure to recognize this is one of the greatest weaknesses he has. I think the Government should take some steps to prohibit the use of grade bulls, especially on the ranges. As things are to-day, the man who purchases a pure bred sire for range purposes has no protection whatever. Some might object to such stringent regulations on the ground that it would work a hardship on the small farmer, but I do not think the objection is well taken, as community bulls can be purchased and the Government has made provision to supply pedigreed sires to farmers' clubs, provided they will guarantee care and feed. The man who by careful breeding and selection creates a better and higher type of animal in any line, builds a monument to his memory that time cannot efface. He has done a lasting service to his country.

Mixed farming to a great extent would solve the labour problem. As the situation is now, we find the wheat farmers employing a large number of men during the summer months and discharging the majority of them when the fall work is done. This does not tend to build up a reliable working class. They know their situation is not permanent and consequently cannot take the same interest in their work as the man who stays on a place for years. They float in and float out, taking their wages with them. With mixed farming the farm hand would have a permanent position. He becomes interested in his work and feels that he is part of the institu-

tion. He spends his money in the district and assists in consuming what the farmer produces. In this way a permanent reliable working class is built up, with an abiding interest in the community.

There is a lesson for the farmer in the world-wide talk of "Preparedness." The nations of the world have been caught napping while Prussian militarism was making vast preparations for world conquest. So it is with the farmer. He has to combat the natural enemies that assail his crops and herds. If he does not thoroughly prepare the soil, making a good seed bed, he starts the seed on its life journey with a very poor chance of combatting its enemies. Give a young plant every chance in the early stages of its existence and you have gone a long way in preparing it for victory in the battle of life. The more experience I have in growing crops the more convinced I am of the importance of thorough preparation of the seed bed. Thorough cultivation of the soil will often increase the yield more than the application of fertilizer.

Mixed farming makes for better citizenship, higher ideals and a broader outlook. There is something uplifting in the study and care of live stock. The individual who loves studying and working with stock cannot fail to find himself the better for it. As he strives intelligently to build up a higher type of animal, he builds higher character for himself. Education is but the developing and training of all our faculties, and in what other vocation in life are all our faculties called into play as in mixed farming? Therefore, let us all unite to preach the gospel of mixed farming in the communities to which we belong, for by so doing we will weave a web of prosperity that will bring to us not only financial independence, but a higher type of citizenship; and we will be utilizing to the full the glorious heritage which God has given us in the rich soil of the western provinces. (Loud Applause.)

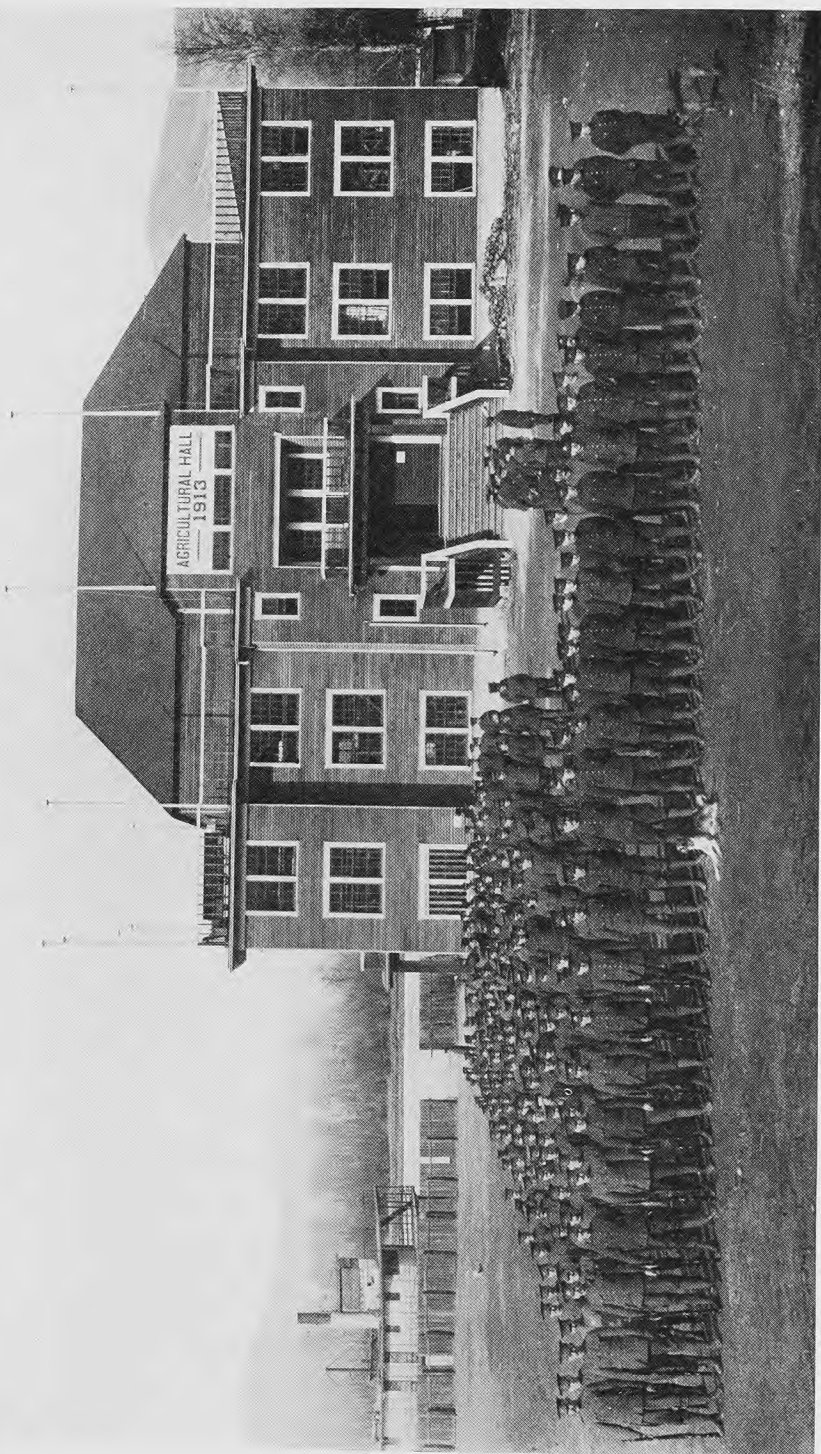
CHAIRMAN: That finishes our programme for this morning. I know you are going to enjoy yourselves very much this afternoon in seeing the way Mr. Strachan carries out the work he has been telling us about just now. This evening we will have a very good programme and I hope that after the exertions of the afternoon, you will not be too tired to attend this session.

MR. JOHNSTONE: I would ask that time for discussion be allowed for the last paper as to my mind it is one of the most interesting papers I have listened to for some time.

CHAIRMAN: I might say that we will certainly arrange a discussion on Mr. Strachan's valuable paper probably not for this afternoon, as you will have much to see down there. Probably it will be this evening or in the morning. I will now call upon Mr. Fairfield of the Credential Committee.

MR. FAIRFIELD: The Credential Committee had a meeting just before this session, but at that time there was a large number of delegates coming in and they informed us that a large number more would be coming in this forenoon with their credentials, so that the number of accredited delegates to report at the present time is much smaller than the actual figures. We had 62 accredited delegates this morning. (Applause.)

CHAIRMAN: That ends the business for the session and we will now adjourn.



172nd Battalion C.E.F. and Barracks, Kamloops, B.C.

WEDNESDAY EVENING SESSION, JULY 26, 1916

Mr. F. H. Peters in the Chair.

CHAIRMAN: The first item on this evening's programme is an address by Mr. J. F. Sweeting, Industrial Agent, Canadian Pacific Railway Company, Calgary, on

"THE POSSIBILITIES OF SUGAR BEET GROWING IN ALBERTA"

MR. SWEETING: Mr. Chairman, Ladies and Gentlemen,—The point of view on which I want to address you to-night is the value of the sugar beet and the production of sugar in an agricultural district. My address is: "The possibility of sugar beet growing in Alberta." By this is meant the possibilities of the commercial development of the sugar beet industry in Alberta, which are unlimited.

Sugar beet growing under irrigation on a commercial scale in Alberta covering a period of more than fourteen years has demonstrated that there can be no doubt as to the successful cultivation of this crop. Beet growing has been proven in that province, both as to tonnage and sugar content, and it now only remains a question of capital and labour to extend production up to market requirements.

As long ago as 1905 evidence was given before a committee, appointed by the Dominion Government to enquire into the sugar tariff, by a representative of the sugar mill in southern Alberta to the effect "that the sugar company had demonstrated that the beet sugar industry under proper conditions could be developed to an enormous extent in Alberta alone, and that the general conditions as to growth, etc., compared favourably with Utah and Idaho." This was followed by a statement to the effect that "about 1897 there was one factory in the inter-mountain states of Utah and Idaho producing about 12,000,000 lbs. of sugar. In 1905 these two states had eight factories and three cutting stations, producing about 75,000,000 lbs. of sugar and paying to the farmers of the two states over \$2,000,000 for beets alone. Alberta has a much greater productive area than those two states."

These are quotations from the evidence given before the committee mentioned, and if one only gives consideration to the increased population in the West since 1905, one can readily see what the possibilities are for producing and marketing sugar in Alberta and her sister provinces.

Dealing for a moment with the question of the production of sugar beets in Alberta as regards tonnage and sugar content, two prime factors from the point of view of the farmer, as his remuneration is based, first, on sugar content, and second, on tonnage; the higher percentage of sugar, the greater the price paid and the larger the tonnage the better the resultant bank balances.

Experiments carried on, both in the Western and Eastern Sections of the Irrigation Block in Alberta show a sugar content as high as twenty per cent, while tests made at the Lethbridge Experimental Farm by Mr. Fairfield in growing under irrigation, and by Mr. Frank T. Shutt, in analysis of such beets, show a comparatively higher production in tonnage and sugar content than the general average production in the United States beet growing states. In some respects the comparison of growing sugar beets in large areas as against small areas may not be

considered just, yet the margin between the two in both tonnage and sugar content is sufficient to allow the statement to be made that Alberta can at least produce sugar beets on an equality with the United States in both respects.

I am inclined to think that this is quite a modest reasoning of the situation, but at the same time believe that it is perhaps advisable to adopt the slogan of "Safety First" when dealing with an industry, the development of which is only limited by the amount of capital it is able to obtain. The question of market I will deal with later on. Moreover, it would seem, from productions made during the years that beets were grown on a commercial basis in southern Alberta, that where proper attention was given to cultivations, etc., the average tonnage yield was high.

Tests made at Lethbridge, taking five different kinds of seed, show a per acre yield of $17\frac{1}{2}$, $16\frac{1}{2}$, $16\frac{1}{2}$, $15\frac{1}{2}$ and $9\frac{3}{4}$ tons, with a sugar content respectively of 17.68, 15.84, 19.42, 17.85 and 15.25; and a co-efficiency of purity of 90.6, 83.3, 90.0, 84.9 and 86.5.

Comparing these figures with production in the United States, we find California per acreage tonnage, 1911-1912-1913, as 10.42, 9.01 and 8.92; Colorado 11.07, 11.32, 10.92; Idaho 12.11, 8.55, 9.90; Michigan 9.90, 6.75, 8.85; Ohio 9.72, 7.84; Utah 13.03, 12.03, 12.21; Wisconsin 11.02, 10.27, 9.66; or an average for the whole of the United States of 10.68, 9.41 and 9.75. Turning to the question of sugar content, California shows the highest percentage for the three years under review with 18.95, 18.79, 18.04; Colorado 15.44, 16.19, 14.92; Idaho 16.65, 17.37, 16.24; Michigan 14.59, 14.72, 15.82; Ohio 15.95, 14.46; Utah 15.98, 16.37, 15.07; Wisconsin 14.23, 15.10, 14.10; or, for the whole of the United States, 15.89, 16.31, 15.58.

Before leaving this question of production, we will turn for a moment to the difference in tonnage in growing beets with or without irrigation as exemplified in Alberta, and for this purpose we will again have to have recourse to our good friend, Mr. Fairfield's, interesting experiments. The figures I have already given you, viz., $17\frac{1}{2}$, $16\frac{1}{2}$, $16\frac{1}{2}$, $15\frac{1}{2}$ and $9\frac{3}{4}$ tons, were, of course, grown under irrigation; whereas non-irrigated beets show from four different kinds of seed a production in tonnage of $12\frac{3}{4}$, $12\frac{1}{4}$, $9\frac{1}{2}$ and $10\frac{1}{2}$ tons. On a basis of \$5 per ton for sixteen per cent beets, you can readily see the advantage of irrigation.

On the question of kind and suitability of soil, it appears to be a proven fact that for sugar beet culture it is safe to say that any of the soil types that are capable of producing grain or other crops will produce satisfactory beets.

Necessarily, the question of soil, climate, water application, etc., are matters for study in each and every district, but with the experiments which have been carried out in Alberta in the Lethbridge District, and both the Western and Eastern Sections of the Irrigation Block, there is no doubt that in these areas sugar beets can be produced under very favourable circumstances. The study which has been made of a wide variety of soils and climates in the United States in districts where beets are grown under irrigation, and under which they thrive, illustrates and emphasizes the wonderful adaptability of this remarkable plant to the wide range of conditions under which it may profitably be produced.

There are, of course, other factors in the production of the sugar beet, which will appeal to any community when it is able to realize the value of the crop as a rotation in conservation of soil values, and the feeding value of the beet pulp, tops,

etc. The sugar beet and live stock industries are analogous, and build up a successful and monied district as quickly, if not more quickly, than any other mode of agricultural development. Quite apart from the value of sugar production, butter, cream, beef, mutton, and so on, become part and parcel of the one undertaking.

From an economic point of view and to enable a sugar producer to make some kind of an impression on the sugar market, a mill of less capacity than 1,000 tons of beets per day is not altogether wise. A mill runs from 70 to as long as 120 days per year; take the average at 90 days, this would mean about 90,000 tons of beets, or taking an average of ten tons per acre, it would mean an area of 9,000 acres would be required as the minimum of the mill. Some 2,500 lbs. of refined sugar is produced on an average from an acre of beets, or say from 237 to 265 pounds of sugar from each ton of beets—90,000 tons of beets would produce about twenty-two million pounds of sugar. The consumption of sugar in Alberta in 1915 was approximately 42,000,000 pounds; in British Columbia, 33,000,000 pounds; in Saskatchewan, 50,000,000 lbs, and in Manitoba 43,000,000 pounds, or a total for the four western provinces of 168,000,000 pounds. To take care of this consumption, approximately 88,000,000 pounds were shipped in from the Pacific Coast mill, the balance being taken care of from the East. I mentioned at the beginning of this paper the question of market. From the above figures you will see that there is a difference of eighty million pounds of sugar to be produced in the West, or say four sugar mills of 1,000 tons of beets per day, or 36,000 acres of beets at ten tons per acre, and taking an average of twenty acres to each farmer, 1,800 beet farmers. It is easy to calculate to what extent this industry can be developed in irrigated districts under proper control, and get an idea what the fostering of beet growing and sugar production may mean to the West in years to come. I might mention that the total production of sugar from beets in Canada in 1915 was only 37,000,000 pounds, yet tests show that the difference between sugar produced from beets and sugar from cane are not recognizable as to quality, and as a matter of fact what difference there is is not sufficient to favour one or the other from the consumer's point of view; but the real economic difference is in the stability that the beet sugar production gives to an agricultural country.

Before concluding, I want to touch on the importance of steps being taken to produce the sugar beet seed. Austria and Germany have been for many years the principal producers of beet seed, and hundreds of years of careful selection has resulted in the best seed being grown in those countries. The United States has hitherto practically imported all its seed from those countries, and last year imported 14,768,200 pounds, which cost the farmers \$1,069,390. Imported seed, then, cost the farmer from 15 to 20 cents per pound, or \$2.25 or \$3.00 per acre.

The European War somewhat disturbed the situation in regard to seed, and, I undertsand, at one time the acreage contracted for in the United States was in doubt of being seeded until Great Britain, at the request of Washington, allowed the shipment of a large tonnage of seed which was at Rotterdam, to be made to the United States.

The raising of seed in the United States is as yet really only in the experimental stage. It is being tried in Utah, Washington, Northern Colorado and California. In Washington there is one farm producing seed for commercial purposes with satisfactory results. A good many factors enter into the successful cultivation

of seed, and much study would have to be given to soils, climates, etc., before deciding on locations, but the production of seed as an industry is something that will have to enter largely into the question of sugar beet production before many years pass over us. In other words, we must put ourselves in the position of being dependent on our own supplies of seed to take care of our sugar requirements. (Applause.)

CHAIRMAN: If there are gentlemen who would like to ask any questions or discuss the paper now read, the meeting is open for them.

MR. MYTTON: I thought there was some gentleman's name down on the programme to lead this discussion.

CHAIRMAN: No; but if you would like to ask anything we will be pleased to have you do so.

MR. RANKIN: I remember when I was last here Mr. Lawrence introduced me to some gentleman who had made a success of it, and I thought if he were here to-night he might like to have something to say.

MR. LAWRENCE: Mr. Moore, of Agassiz, was to have been down to lead a discussion upon this subject. He is the Superintendent of the Demonstration Farm down there, and we have been relying upon him to be here for that purpose. As he is not here to do that, I would ask this question, a question which is a burning one in this district: Is it necessary that there should be a certain amount of lime in the soil to grow sugar beets successfully?

CHAIRMAN: I believe Mr. Moore is in the audience. Would you care to answer that question, Mr. Moore?

MR. MOORE: Mr. Chairman, Ladies and Gentlemen,—This is really presumption upon the part of the local Secretary and also upon the part of the permanent Secretary, because I told them I did not know anything about sugar beets, but what I know would certainly start a discussion, and if you want that I will certainly tell you all I know about it. (Applause.)

I have been carrying on very much the same experiments as Mr. Fairfield, only I have been doing them not under irrigation conditions. As far as I have gone in the past five years in the work, the growing of sugar beets in the lower Fraser is absolutely out of the question, and particularly from the prices the last speaker has given for the material. I cannot produce sugar beets at Agassiz and pay twenty cents an hour for ordinary labour and twenty-five cents an hour for a team, and pay interest on \$150 an acre on land. That would be the quickest way for me to starve to death. I got nearly as much in yield as Mr. Fairfield does. As I remember it, we got very much the same percentage of sugar as has been given, but there is no way to produce it unless we can get cheaper labour down our way. It all hangs on one word, and that word is "labour," and when we have not got it we cannot do anything else but leave sugar beets alone. If anyone wants a discussion they can now have it.

DELEGATE: Give us the values of the sugar extracted.

MR. MOORE: There are only two. As far as the top is concerned, it is not worth anything. As a food, it is not worth anything. If you put it into dairy cows it will scour the cows. Dried beet pulp is an excellent food in its own class. For dairy cattle it is very good. If we had that in our country it would be worth something. The molasses which would come from the factory is also valuable, but not as valuable as molasses that come from other sources, as has been proven by experiments. You can put it in this order: The top is worthless; the pulp is worth a little.

DELEGATE: I would like to ask about the average weight of sugar beets. I bought some sugar beet seed this spring, or what was supposed to be sugar beet seed, and I sowed it and got some that weighed something like seventeen pounds.

MR. FAIRFIELD: Answering the question Mr. Lawrence asked in regard to whether the soil must contain a certain amount of lime, I think Mr. Sweeting has covered that by saying that sugar beets can be grown successfully on any soil on which grain crops will grow. Grain crops will not grow on soil that is not well balanced, and sugar beets will not grow on one that is not well balanced, but will grow, as far as my observation goes, on any soil that will produce ordinary grain crops successfully and well. From the knowledge that I have, which is a rather limited knowledge, of sugar beet growing in the United States, the most successful sugar beet factories have been started in the drier parts of the country. They have been most successful, perhaps, in the irrigated areas. In those areas the rainfall is less and there are more mineral salts in the soil because where the rainfall is limited these mineral salts are not washed out of the soil. Of course, sugar beets will not grow on an acid soil, but will grow on a soil rather strongly impregnated with saline matter—not in a soil that we would call an alkaline desert.

I am fairly well acquainted with the operation of the factory that was operated in southern Alberta for some seven years. It is not in operation now. One of the principal reasons that it did not keep on going was the fact that the management did not bring in the proper labour. They depended upon local labour and Indian labour. There were other reasons, too, but that was the principal reason, and I think if they had the proper labour sugar beets could be raised profitably under conditions as they exist in southern Alberta. Looking at it from my point of view as a layman, it seems to me to hinge on the question of labour. If the manager does not see to that question of labour, that is, thinning and topping, the factory cannot be operated successfully.

MR. FRYBERGER: I did not intend to say anything on the subject of sugar beets at this time because I have a discourse for to-morrow and that will enter into whatever I have to say, but I feel it is important at this time because it is better to strike while the iron is hot, and I believe from what experience I have had in growing sugar beets that they can be grown successfully, at least in Alberta under irrigation. I will have something to say about that to-morrow.

Mr. Sweeting gave a statement of the prices paid by the Southern Alberta sugar factory, but he did not mention that those were the prices paid several years

ago when we were paying five and six cents a pound for sugar. At that time, and previous to that, beets were being raised in the United States for \$4.00 and \$4.50 a ton, flat rate, but since that time they have paid for the same beets or beets not richer in sugar, as high as \$8.50 a ton. So, in growing them on a sliding scale, we would be governed by the price of sugar, and it is a question whether it will be maintained at its present high price.

I have been experimenting in sugar beets somewhat in the Eastern Section of the Irrigation Block, and I have been doing it on ground that had not been previously prepared for the growing of sugar beets. I mean by that, it never had alfalfa on it and had not had manure or fertilizer used on it whatever. I succeeded in growing ten to twelve tons per acre. Last year some of those beets were sent down to Billings, Montana, to be tested as to the saccharine content, and they tested twenty-two per cent, and I understand the report can be seen at any time.

So far as the tops are concerned, I do not know just what the gentleman had reference to in regard to tops. If he took and twisted the top off the beet, it has no value. As we understand the tops when you sign up a contract to grow sugar beets for a factory, the contract states that you must cut the top off at the base of the lower leaf, and if you have beets weighing eight to ten pounds you would cut off about a pound of it. That is almost as rich in saccharine as any part of the beet, but it is so far above the ground that it is full of impurities and the factory refuses to take it. That is the value of the beet top as we understand it. I know in the sugar beet district if you take a crop of ten to fifteen tons to an acre you will have no difficulty in selling tops at three to five dollars an acre. I have used them myself and know that they are good food and as good as the sugar beet itself, and better. Sugar beet is a strong food and a beast that has not been fed on it right along will scour if given a big beet at one time. I will guarantee if you turn out your cattle in a field of sugar beets, properly topped for the factory, they will let all other food go until the tops are all eaten up. I consider it the best food there is. If I had horses that I wanted to fatten quickly I would rather turn them out on sugar beet feed than feed them hay and oats. I have had experience in this and know it.

Another thing, in districts that have had sugar beet factories, sugar beet growing has grown and means more money to spend and the farmers have gone ahead faster than in other parts of the country. I have made more money at growing sugar beets than any other one thing. I am satisfied that under irrigation in Alberta, sugar beets can be grown and I hope will be grown for commercial purposes. I believe it to be the only thing to bring the land up to make it worth what it cost. It creates lots of labour. As has already been stated, that is the important part of the question. My experience has been that if we ever succeed in getting a factory, the factory will see to the labour question. If they think enough of the proposition to come in and invest the money they will first investigate the labour proposition. As has been stated, the labour has to be imported and it can be imported into British Columbia or Alberta just as easy as into any other place. I had a talk with Mr. Elson, who has charge of the Southern Alberta factory—that was in 1913—and he told me that he paid \$15.75 for the entire handling of the sugar beets per acre.

DELEGATE: Where can you get the labour?

MR. FRYBERGER: I have paid as high as \$20 in Colorado. I have been asked where we will get the labour. That is not my part of the proposition. I said the factories will look after that. You can rest assured that no factory will come in until they know where they are going to get the labour and all you have to do is to notify their labour leader that you need certain labour at a time and you will get it. We may have to pay \$22 to \$25 an acre for the same thing that we get from \$15



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to \$18, but will likewise get more for our sugar. We are paying up to \$10 for a sack of sugar where we used to pay \$6. I have had a talk with the auditor of the sugar beet factory in Colorado. Mr. Porter was at that time superintendent of the ditch under which the beets were grown, and he knows Mr. Stackhouse, the auditor of the sugar factory. This factory drew beets from a radius of five miles around and he told me that from September to January their factory paid out an average of \$40,000 every two weeks to the farmers. You can imagine what that would be to a community of that size. The cashier of the First National Bank told me that ninety per cent of the money paid to the Mexicans stayed right there in the community. I have been to public sales, time sales, where a small cash discount was given on the purchase and ninety-five per cent of the money of the sale was paid over in cash. Everybody had money, but unfortunately, after a while, the water played out and people quit growing sugar beets and the hardest time was then had in that country. I am heartily in favour of sugar beet growing, and I think you can make it pay.

MR. JOHNSTONE: I think this discussion is a rather peculiar one. We can all grow sugar beets. The whole problem is one of labour. You cannot import labour into British Columbia.

MR. STRACHAN: I don't know very much about the growing of sugar beets. We had a test recently. Seeds were supplied for one-tenth of an acre, which plot no doubt some of you saw to-day at the ranch. If I could hire men at \$22 an acre to handle beets I would be tickled to death to get them. We have had very good men at our ranch and some would handle them at \$40 an acre. I would like to grow mangels that I could handle at \$40. Maybe Mr. Fryberger could give us some information as to how it can be done. It appears we are on the wrong side. There is something wrong with us or our men. There must certainly be some other way of handling mangels or sugar beets than the way we have been doing. The cost of handling it is enormous as compared to the idea Mr. Fryberger has.

MR. FRYBERGER: That does not include all the labour. That includes thinning, hoeing and the topping, that is all. Of course, I don't know what the labour would cost to-day. I have not been growing sugar beets, except what I take care of myself. I quoted to you what Mr. Elson gave me as the cost in Alberta. That is the nearest I can tell you. Of course labour is higher now. The price of sugar is correspondingly increased so that we can afford to pay more and make as much money.

MR. MYTTON: I have been very much interested in this discussion and I hope that there will be a verbatim report made of this so that I can later use the statements made here to-night. There are a great many people in the company which I represent who would be interested in this and I would like to give them this information. I have heard it is profitable for the farmers to produce sugar beets here and I hope it is. Will some gentleman tell us if it is possible for farmers to produce sugar beets and would it be possible for a factory to produce sugar beets on a farm.

CHAIRMAN: A verbatim report is being made of all the proceedings of this convention.

MR. THRUPP: Mr. Sweeting mentioned that the minimum area which could be relied upon to make a factory pay would be 9,000 tons.

MR. SWEETING: 90,000 tons; 9,000 acres.

MR. THRUPP: Here you would have to haul the beets a considerable distance from the farm to make a success of it. That would limit the amount of sugar beets that could be grown here.

MR. SWEETING: Experiments show that in the United States they do not put factories in an area where they cannot get the proper acreage. You cannot haul the raw product any distance to make it a success, neither can it be held in shipment. My understanding is that the fine sugar costs $1\frac{3}{4}$ cents to produce.

CHAIRMAN: I think we have had a pretty good discussion on this point. I think the Secretary has a news bulletin which I will ask him to read.

The Secretary then read news bulletins which were of such a nature as to arouse loud cheers and applause.

CHAIRMAN: We are next to be favoured with a song by Miss Brown, the Nightingale of Kamloops. (Applause.)

Miss Brown then charmed the convention with her rendition of "When Irish Eyes are Smiling." (Applause.)

CHAIRMAN: The next item on the programme is a paper by Professor L. S. Klinck, Dean of the Faculty of Agriculture, University of British Columbia, which will be an illustrated lecture of "Improvements in Corn Varieties."

PROF. KLINCK: Mr. Chairman, Ladies and Gentlemen,—I think after listening to that splendid solo interspersed in our already heavy programme, that it was just the thing that was required to give the programme a balanced ration. (Laughter.)

What I hope to do this evening is to touch upon the growing of corn and the selection of the proper strains in which you are interested in this district. One thing that has impressed me at this irrigation convention is the emphasis placed upon live stock and agricultural education, but back of the successful handling of live stock, back of the successful handling of the soil for the production of horticultural products there lies the proper management of the soil which is so important in the growing of any successful crop.

In the corn plant we have a high-yielding, nutritious, palatable and succulent roughage for live stock which may be used as a soiling crop during the late summer and early fall, or as an ensilage during the entire year. This crop gives promise of becoming of very great value, especially to the dairymen of the province and, as more information is gained relative to the exact conditions essential to its successful culture, the more rapidly will the acreage devoted to its cultivation increase. In many districts silos are becoming common and, in the majority of instances, the owners are planning to fill them with corn ensilage.

As a result of the increasing appreciation shown by live stock men of the great asset they have in the corn crop, there is a growing demand for information as to the best varieties for different requirements and for different natural conditions. Unfortunately, little experimental data obtained in this province are available. Aside from variety tests conducted by Mr. P. H. Moore, of the Dominion Experimental Farm, Agassiz, B.C., but little work has been done with a view to determining the varieties best adapted to different parts of the province, and, so far as I am aware, no breeding experiments with this crop are now under way.

The first step to be taken, therefore, is to secure reliable data as to the behaviour of the most promising sorts now offered in the trade, and then proceed to improve the best of these by selection and breeding, providing we find that we do not now have a sufficient range to meet our varied needs. In the meantime we should confine our attention to the cultivation of those standard varieties which experience has shown to be best adapted to our requirements.

Since eight-rowed flints are usually earlier in maturing than the large twelve-rowed varieties, they should be planted in districts where the growing season for

crops which are easily injured by freezing is short. In localities possessing a longer immunity from frost and where the average temperature is higher, the late maturing dent varieties may be most advantageously grown.

In order to secure a dependable supply of the variety required, the grower must not only be well versed in what to look for in a sample of seed corn, but he must know a good sample when he sees it. What constitutes a good sample depends upon the conditions under which the corn is to be grown, and upon the use to which it is to be put. For ensilage purposes, the corn which gives a moderately heavy yield, coupled with quality, is much to be preferred to a very heavy yielder which does not produce well-glazed ears by ensiling time. Likewise, a variety which produces a low tonnage of fodder but a high yield of matured grain, is not so desirable an ensilage corn as one which yields a heavier tonnage of stalk and leaf, coupled with a high proportion of well-glazed ears.

Evidence of breeding, of proper maturity, and of probable behaviour when planted can always best be studied when seed corn is purchased in the ear. Until our farmers insist upon being supplied with ear corn instead of with shelled corn, as at present, the difficulties of securing a dependable supply will continue to be very great.

Professor Klink then illustrated his address with numerous slides, many of which had been specially prepared for the occasion. All the slides used were original and were based upon his experimental work covering some nine years at Macdonald College. These slides showed very clearly the different classes of commercial corns—dents, flints and sweets—and furnished the basis for the discussion of the suitability or otherwise of different varieties and strains for different conditions. The strong and weak points in kernel formation were emphasized, and particular attention was directed to the evidences of low vitality resulting from immaturity, from freezing or from improper storage.

THURSDAY MORNING SESSION, JULY 27, 1916

CHAIRMAN (Senator Bostock) in introducing Mr. P. E. French, Assistant Horticulturist and Inspector of Fruit Pests, Vernon, B.C., said: "We are, of course, sorry that Mr. Young has not been able to meet us here. We were all looking forward to meeting him here and discussing with him the question of water distribution which, in this part of the country, is of very great interest to a large number of the delegates. Mr. Lawrence has just handed me a telegram which has come in from Mr. Young as follows: 'Owing to important matters in hand impossible to attend convention.'"

I will now call upon Mr. French to address the meeting."

POTATO AND TRUCK CROPS UNDER IRRIGATED CONDITIONS

MR. FRENCH: Mr. Chairman, Ladies and Gentlemen,—I am very pleased indeed to have this opportunity of speaking before the members of the Western Canada Irrigation Convention and on a subject which is probably one of the most

important under irrigation. The subject allotted to me is, "Potatoes and Truck Crops under irrigated conditions."

When we take into consideration that there is more food value produced from potatoes than from any other crop produced in the world, we can realize its importance. However, it is a business that is very speculative. Prices vary a great deal from year to year and one must stay with the business year in and year out to make money out of it. If they do not, there has to be very good profits indeed to make it come out right. A good rule in growing potatoes is to plant when the seed is cheap. That does not always follow out, but generally speaking an average grower puts in a large acreage when he has to pay high for his seed. As a side line to orcharding it is a profitable business. In many cases I have practically made my expenses on my young orchard by using the ground between the young trees for vegetables or potatoes. Last year at Salmon Arm we made a considerable profit above all expenses. However, we all cannot do that. If everybody went into the business our present market would be over-stocked. As I said before, any one who is going into this business must give the market a fair study. We have unforeseen fluctuations. The price is often low and the prices generally depend upon our market.

I think it is the duty of the truck growers to advertise their product and in that way increase consumption of their products and extend our markets. The consumption of potatoes in the United States is only three and one-half to four bushels per capita. In Europe it is three times as much. A good move was made last year by shipping potatoes to Australia and it turned out all right. It is up to the growers themselves to start the movement. They have in fact started. The government will probably come to their aid after a while. We must advertise our potatoes and other truck garden products the same as we do other crops.

One great disadvantage the truck grower has to contend with in this part and other dry belts of the province is that our markets are all far away. We have no market at our door. We have to ship considerable distances and to make money out of it we have to be in it on a fairly large scale. I have seen very few "democrat" farmers make a success of it in the upper country. To get the retail trade you have to be very close to the city or in it. We can produce the quality second to none and we can produce large quantities of it under irrigation, providing we can get the markets. We must try to get into evaporators and storage plants. The evaporators were the salvation of the Okanagan district last year. They took all the surplus stock. If it had not been for that business the prices received would have been very low indeed. I think it is up to the growers to advertise their business and see that it gets on to the market in better shape.

Another drawback is Chinese labour. The Chinese question is one which will have to be dealt with sooner or later or the white man will be forced out of business in the upper country. The Chinamen are telling us now that in a very few years they are going to own the Okanagan valley. That may be so or may not be. It has to be given careful thought. It was all right so long as we had the Chinese working by day labour and not competing with us in producing. At the present time they are renting land and I think 75 per cent of the vegetable business in the Okanagan valley is in Chinese hands. The buyers, with the juggling of the Chinese, are able to control the market. The Chinese living conditions as we are all aware are entirely different to those of the white man. The Chinese grower has no money

in the business. He rents his land and he grows the stuff. He pays a fair rent for the land and if he cannot sell his stuff, he goes away and leaves it. The only thing he has to lose is his own labour. It is a question which will have to be taken up sooner or later or we will have the same trouble as they had in California.

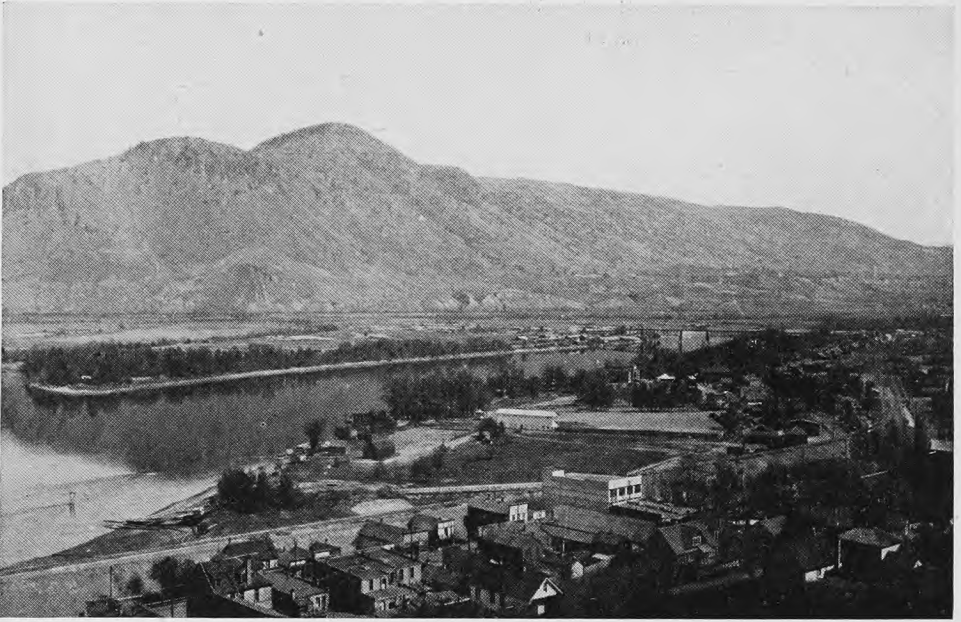
We must bring down the cost of production as much as possible by the use of machinery and by getting right down to hard work. We have a good many growers who are making big money out of the business and we also have a good many who are only playing with it. We must get into the carload shipping class and ship out in large quantities. The average production in the United States of potatoes alone is only 89.8 bushels per acre; in Great Britain 186.4, or more than twice as much. How is it that we have just as good land as they have and we are not working it or keeping up the fertility of the soil? The success in growing a crop depends upon the stand we get and to get a good stand we must have the proper kind of soil and keep up the fertility of that soil. It is absolutely useless for any one to go into the vegetable business on played-out, weedy soil or soil that has been played out without anything being put back in it. We must have a soil easily worked, and we usually find that sandy loam, well drained, and under irrigated conditions, will give us the largest returns.

We must follow out a proper rotation of crops. Most of our potato growers have been trying to grow potatoes on the same ground five and six years in succession. They are only just now beginning to find out that their crops are getting less and less all the time. It is time for a change. It is the same with all our work. The conditions are changing too and we have to change our ways for that reason. Probably the onion crop is the only crop we can grow on the same ground year in and year out. Probably they give better results when grown on ground year after year. That is probably due to the care that the onion has received. As a rule, vegetable growers will spend more time on that crop than on other crops. They keep it freer from weeds and that keeps down the cost of labour. Then we must have our soil well drained and we must be very careful in our irrigation. That is probably the most interesting point to you here to-day. To get that good stand it is often necessary to irrigate our land before we plant the seed. That is not done as often as it should be. This is particularly true of the drier sections in the southern Okanagan. As I said, we must get a good stand. It is a loss of time and money to be working with only half a crop and to get that good stand we sometimes have to irrigate before we put in the seed.

In potatoes we find that a fairly loose seed bed is what is required. It is just the opposite with the other crops. In the potato business seed should be planted down in the moisture of the soil, and we do not need it so firm as we do with other crops; our ground should be ploughed in the fall and worked up thoroughly in the spring. It is not necessary with all truck crops, but it is well for the potato crop. The onion seed should be put in early in the spring and to do that early in the spring we should do the ploughing in the fall. The onion and the potato are planted first as the frost does not hurt them as early as it does some of the other crops.

With regard to fertilizers. Of course, there is no fertilizer in the truck business that will come up to the good old barnyard manure. Possibly in the vegetable business more commercial fertilizers are used than in any other crops. It is probably true more with truck crops than potatoes. We have, however, little experiments yet

in regard to fertilizers to go by in the upper country, but in Summerland and at Windermere, we expect soon to be able to give you more definite information from those sources. Most of our growers are looking ahead and do the best they can but some are not doing anything.



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Little has been done in the way of seed. This is probably the same as Professor Klinck said about corn last night. It is the most important thing in the business. In selecting our potatoes we should make it a practice to grow our seed in a separate place for that purpose. We should take it out from a hill producing a large number of medium sized potatoes. We do not need to do that every year, but if we do that for a season we can increase our production. The potato seed usually runs out in three or four years, but by keeping up the selection we can keep up the vitality. One way to keep it up is by the mulch system. In Nebraska they have been doing that for eight years. They have found that they can improve it by growing a certain percentage under mulch conditions. They simply have their ground in a good, moist condition in the spring, when planting the potato and soon after planting it is covered with a straw mulch or old hay to a depth of four inches when it is sunk down. The growing of good seed requires a cool soil and that is the idea of mulching. Under those conditions a farmer even if growing cultivated seed for some five or six years will, after growing it for one year under mulch conditions, bring back the vitality of the seed and get as good returns as by importing potatoes from the north. The potato does well at a high altitude and grows in good quality and where they are in the business on a large scale they often import their seed which has been grown under those conditions so that possibly the mulch system of growing seed might well be experimented with in this district.

Another point is, I think, that in our vegetable sections in the dry belt, we might grow seed for use at the Coast and for other centres. I think we can grow it cheaper. The reason for advocating that is that in the Coast sections, they are troubled with blight. The cost of the production of pure and clean seed is greater than in the dry belt. Under present conditions with the high prices of bluestone, it costs eight or ten dollars an acre to spray those potatoes to produce clean seed. I think there is a chance of a market in our irrigated section for that. A number of people claim that the irrigated potato is not as good as the non-irrigated potato for seed, but if we use our water intelligently and thoroughly, I cannot see any reason why our potatoes should not be as good in the irrigated district as in the non-irrigated district. The main point is to keep our crop growing without any check. It will depend, of course, upon our district and our season as to how much water to apply. We must keep it growing without a check. If we allow a check and then put on water we get a great many misshapen potatoes. So, do not wait until the potatoes get dry before you apply your water. To make money out of the business we must have our land fairly easy to irrigate.

In buying seed for other truck crops, we should be very careful indeed to get the best. It is very poor policy to buy cheap seed. Many of the growers should be growing their own seed. This is something that is done only on a very small scale at the present time. I would not say that it would pay us to go into the seed business and produce it for sale. The cost may be rather too high for that, but there is no reason in the world why we should not do it for ourselves. Those who are doing it are getting much better results than by buying their seed from other sources. We can easily grow onion seed, carrot seed, and other seeds in this district and the Okanagan district.

For early production we must have an early soil. A sandy loam soil containing a great deal of decayed vegetable matter is a very good soil. It is better to stay where there is late production and get a large crop. In planting we usually advocate putting in our early potatoes at as shallow a depth as possible. Our later potatoes are a little deeper. We get better results by putting in early potatoes two inches deep. Have the ground thoroughly worked up. Put them in warmed-up soil. If we put them three or four inches below the soil we find they decay. The late potatoes can most economically be put in at a depth of four inches and the potato planter is a great labour-saving machine in that way. It is more economical in harvesting and more economical in cultivation. The plants are at an even depth and in straighter rows and in that way we can cultivate the crop much easier. In planting onions, carrots and parsnips we should have a nice firm seed bed. If we do not we are very apt to get a very irregular stand from the standpoint of growth. The idea is to get the moisture to come to the surface. By rolling a couple of times and finishing off with a smoother we have the moisture come right up to the surface to germinate the seed. We lose a certain amount by evaporation, of course, but we must have the moisture right close to the surface. We can easily irrigate the crop after the crop is up to supply the required moisture later on. Our vegetable seed should be put in $1\frac{1}{2}$ to $1\frac{3}{4}$ inches deep, which will be found to be plenty deep enough for most of our garden truck. The greatest trouble that potato growers have had in dry belts with diseases is the potato scab. The main reason why it has become so bad is that people have been trying to grow potatoes on the same

ground year after year. I do not think it pays in a commercial way where we are growing potatoes in large quantities to treat our potatoes for potato scab. We should be careful to use clean seed. It has been proven that spores of this disease are in the soil and it is absolutely useless to plant clean seed in scabby soil and expect to get clean potatoes.

I see my time is already overdue, but it is a hard subject to deal with in a short time and give exactly what I would like to give. I would sooner have a little discussion on it and answer some questions than go any further. If there are any questions you want to discuss we can probably get more readily the points desired to be brought out.

MR. WILLIAMSON: What is the best digger and picker and the one that will put potatoes in the sack?

MR. FRENCH: I do not know of any digger that has been a success. The trouble is that it will not discriminate between a stone and a potato. The potato digger that has given the best results in our conditions is one that lifts the soil and the potato and leaves the potato on the ground at the back.

MR. WILLIAMSON: But this year you could not get any one to pick the potatoes off the ground.

MR. FRENCH: The labour problem is one that is difficult and if any one is going into the business they should figure out their labour question beforehand.

MR. DAWSON: What is the most profitable variety of potato?

MR. FRENCH: We find certain varieties do well in one district and not in another. One of the best grown in the Okanagan is the Early Ohio. Early Rose is grown more than any other. It is not exactly an early potato, but it produces a large crop and if you cannot sell it early, you can sell it later on, although it is the wrong colour to sell as a late potato. You should have a white potato. It does not always mean that the white potato is better than the red. Quite often the red varieties of potatoes are better. We have Carmen Number One; Netted Gem; Gold Coin; Wee Macgregor and the Empire State. Money Maker is one of the best qualities in potatoes which we grow, but it bruises rather easily and it spoils its appearance on the market. It is best to have a variety with a netted skin or one that does not bruise easily. Those are some of the best varieties at the present time. The Million Dollar is grown around Armstrong and under clay conditions is one of the finest looking potatoes we have.

MR. STRACHAN: I understood you to say the potatoes grown at a higher altitude are better potatoes. Those on the higher altitudes I have found to be soggy or water-logged and they stayed that way after they were cooked and they do not seem to have ripened properly.

MR. FRENCH: That is not usually the condition. You must have soil conditions to make them soggy. Generally speaking the potato grown in the higher altitude is a better potato than that grown on bottom land. It does not always follow that way, but generally speaking it does.

MR. MITCHELL: I might say that I have a ranch 2,000 feet above sea level. To-day, we are using potatoes that we grew last year and I will guarantee that there are no better potatoes than ours. I understand that the low land is swampy land and the potatoes grown on that land would not be as good as those on a higher altitude. The potatoes grown in high altitudes are really better keepers.

MR. STRACHAN: We purchased potatoes that were grown on a side hill and they were soggy and those grown on our land in the bottom were better and I have had people refer to them. I am, of course, speaking of the country to the north of here.

MR. FRENCH: Is your soil a bottom land soil or is it on the bench?

MR. STRACHAN: It is grown on the irrigated land about one hundred feet above the river.

MR. FRENCH: Oh well, that is not what you might call bottom land.

MR. STRACHAN: I always purchased potatoes grown on high land and they rotted before the winter was over and when I tried cooking some of them they still had the same soggy appearance that I speak of. They were not under irrigated conditions at all—these were grown under dry farming conditions.

MR. LAWRENCE: I break a lance with Mr. Strachan on this subject. There are and have been grown for several years past potatoes, namely, Vermont Gold Coin, in our district at an altitude of 2,500 feet above sea level and those potatoes have such good eating qualities that we are eating them to-day and they are as good to-day as they were at the beginning of the season. The potatoes that Mr. Strachan is speaking of must have been grown some place where the soil was heavy and the water lies continually. There are places in this district like that and when potatoes were being grown in that particular district a few years ago, I was in the unfortunate position of having to find a market for them and ship them out to the prairies and I found some difficulty in doing that. But, even that matter has been dealt with and where the land is heavy, they are now growing celery and cabbage and a short distance from those places they are growing excellent potatoes. It is all a question of soil. With the soil we have here, and being able to put on just the right amount of water, we can get bumper crops of potatoes and quite easily better than the potatoes Mr. Strachan has spoken of.

MR. WILLIAMSON: I feel very sorry for any man who has to go into this kind of business. The Cypress Hills country I may say is about 3,200 feet above the sea level and you might just as well try to suck a sponge as eat a potato off the Cypress Hills, but the potato from the low part of the land is quite good.

MR. FRENCH: You must have a lot of moisture in those hills to have that kind of potato. It is not usual. I know in my own case my bench land potatoes always keep better than the ones on the bottom.

MR. FRYBERGER: Do you find that after cropping land for four years it injures the land or do you follow it with grain crops? How does it leave the land?

MR. FRENCH: It leaves the land in very good condition for grain crops. I would say follow with clover or follow with grain.

MR. WOODWARD: I think the quality of the potato depends greatly upon the quality of the soil and the water. From the remarks passed here it appears that different people have raised different crops of potatoes on almost the same soil. Possibly the ingredients are not in the soil to produce the first-class potato. It has been proved that phosphorus and potash are required to produce first-class potatoes. If these are not in the soil you will not get the best potato. In the way of a soggy potato a great deal has to do with the treatment. You can take sandy land which is always recognized as a land to bear mealy potatoes, but I took a row here and a row there and still got soggy potatoes. If you irrigate your potatoes too much after having reached a certain stage, and that stage is just while the potato is in blossom, you will have a soggy potato. The potato will hold moisture. Then again on clay lands you cannot irrigate so often and the system I find on clay land is to hill up well and make your ditch deep so that any excess of moisture will go to the bottom and the potato will dry. The potato does not require a great deal of moisture, but only sufficient to grow. I find if you can take the ground in your hand and mould it easily, it is moist enough to grow any potatoes or vegetables.

MR. FRENCH: As I said before, a whole lot depends upon intelligent irrigation. We must not let irrigation take the place of cultivation which a good many of our growers are doing.

MR. WOODWARD: They have given the results but I do not look upon their results as any criterion of the quality of the potatoes. How did they treat the potatoes? You can treat the potatoes in the best of soil and get dry and soggy ones together. If they all treated them the same and the soil was the same there must be something wrong. I have farmed at 3,000 feet and 700 feet and I have found that just as good potatoes can be grown at 700 feet as can be grown at 3,000 feet. I believe I had a better soil though at 700 feet than I have at 3,000 feet.

CHAIRMAN: That appears to be the end of the discussion. I will now call upon Mr. P. H. Moore of the Agassiz Farm, Agassiz, B.C., to address you. (Applause.)

MR. MOORE: Mr. Chairman, Ladies and Gentlemen,—Everybody has said that they are pleased to be here, but a great many people have seen me here and they, with those who don't know me, probably think I am pleased to be here and enjoying myself, but I must confess that for the next twenty minutes I am afraid I will not be enjoying myself.

My subject will probably be of some interest to some of you, although this is a fruit growing, mixed farming and irrigated country. I will not take a great deal of time. If you can stand five or ten minutes for discussion afterwards, I can pro-

bably do a little better that way than by direct address. The subject I will address you on briefly is—

BUILDING UP A DAIRY HERD

Now, start out with a mixed bunch and take some of them off the range, possibly, for we must start from the bottom. I might talk things that you may think is twaddle at the moment, but when you go into the dairy business you will come to think and be glad you did. In grading up a dairy herd, I mean to start with the common or ordinary variety of cow such as you will find in a district like this. There are several kinds of that type where the breeding has been done indiscriminately and we have scrub cattle. You will be led after seeing the progeny of these cattle to think that they are here just to marry and inter-marry. If you can say there is any breed in some of those scrub cattle we have to buy to start our dairy herd with, I would like to have it named. Grading up a dairy herd may be applied to this kind of cattle, however, as well as pure bred. Every breeder has to start with what he can buy and when he pays he certainly does not buy the very best the dealer has and he has got to grade up. The term as generally accepted means the improving of the grade or scrub cow.

To make matters short, I think we will take it under three headings. I have really got about twenty-five, but we will start with the minimum of breeding to get your animals and feeding to carry on your breeding and selection. I will just touch upon those three headings and give you a chance to ask me some questions afterwards.

BREEDING

If you start on breeding operations of this kind, it is no mean task for a young man like me to stand up and state that I can teach older men, for that is some presumption. However, there has been such strides made in the matter of improving the breeding of both grade and pure bred cattle that one who has had some experience in that line is wiser than the older man starting in to-day; although he may be older he can learn a lot. The man who goes into dairying should like animals. It is no use going in unless you do like animals. If you are not in sympathy with animals you will have to stay with fruit farming and mixed farming in a way without this live stock, because we have seen men with money and men without money right in this province of ours, start in on this game of breeding up a pure bred or grade herd and fall down simply because somebody said that stock was the whole thing and they went into the game and fell down, because they had no perseverance and did not understand animals. You take an old breeder, middle-aged or old, if he has made a success of it his name "man" is spelled with a capital "M" and in some portions of the country where the fair sex have taken hold of it, it is spelled with a capital "W." I am not going to start any discussions just now of breed, because I look too young. If I were starting in this district as a greenhorn I would cast about to see who were the most successful breeders in the community and if there were any preponderance of one breed I think I would be justified in thinking that was the best breed for that district. Some have said, "I will try another breed and go in for competition."

That is wrong. You have enough competition in other lines, but competition in the same line is going to be the best thing that happens in the sale of stock for breeding purposes because you have a district with a name. I cannot talk about the community breeding, because it is several lectures in itself. That is the right idea. Some men say, I cannot stand for a black and white cow or a Jersey, and so on, but if you are going in for it you will soon learn to like them if it is the most popular breed in the district because everybody will be talking about it and you will be able to compare your work.

SELECTION

After you have decided upon the breed, the selection of sire is the next move to make. If you have only ordinary or scrub cows of the pie-bald, flea-bitten type, you want as good a sire as the man who has a pure bred herd. It is doubly necessary in a grade herd. You will find that statement is absolutely correct. Every breeder who has preceded us for the last 75 to 100 years has proven that point. It is no light job to select a sire of repute and you know any of our honest breeders in this country will tell you they have made mistakes in that line themselves and therefore for the beginner I must say, although I admit that the young sire has his place and has to be grown and will oftentimes produce excellent stuff, yet the old bull is the one to go to. You have ten chances to one. You will have to take into consideration pedigree. In an old sire one can see his sons and daughters. We do not keep a bull for ornament or as one man said, "for a continual round of pleasure," for him. If you are buying an old bull you will see his progeny and know what you are going to get in the way of performance, type and style. You put him on to the grade herd and he will do for two years. You will have to have another one to put on to his daughters, but if he is then breeding good daughters do not sell him off to the butcher; trade him to a neighbour and then you can get him back again. Or, keep him for two years as an ornament and if he is not working he will not be an ornament that you will be ashamed of.

You can get it back to breed on to his grand-daughters. Some of the oldest and best breeders in the country have done that and now they would not part with the old bull for five thousand dollars. Some people say that is in-breeding. I do not think so. Some people write to me and tell me that they want a sire absolutely unrelated to the others. If you know an old bull is strong and good and is producing what is right, do not be afraid to put him on to his grand-daughters. That will work in an ordinary layman's hands. Do not be afraid to pay something for the bull. Look at the big prices the pure bred men pay. They are in a bigger game and handling more money than we do. When a man comes to me to buy a bull I offer him two. I say, "I do not want to sell that one to you because I think he is going to fail—daughter and grand-daughter are not very good. Here is one that is good." I take a book out and show him the record of his progeny and I tell him that I want three times as much for that one as I do the other one. He says, "The ordinary farmer is not able to pay that." That is the biggest mistake he makes. He cannot afford not to do it. Compare the cost at the end of five years of a cheap bull that won't get stock for you and you have raised 40 or 50 heifers from him costing money and labour and they are only producing 10 per cent more than their mothers. As to the off-spring of a good bull you have paid three times as much, for experience

has shown that the increase of the daughters over the mothers has been from 20 per cent to 30 per cent or an average of 25 per cent. Where is your cost considered to heifers producing like that? Where does it come out at after working 365 days in a year and only being 10 per cent better off than at the start, to say nothing of the lack of courage and spirit, and that means something in the breeding of dairy cattle?

I do not know that I mentioned it, but I think I inferred it indirectly, if you have the good bull stick to him and hold him as long as you can get cows from him, because there will be some way to use him and two good daughters will pay his keep in a year. If you have a poor bull, get rid of him and do not stick on the price and do not let sentiment enter into it. If you bought him off your best friend, get rid of him. If the family is a good one that the sire came from, keep it and stick to the family. If there are weaknesses and we find there is in almost all of them, get a family that will drive it out. Do not go to extremes, because it is impossible to make headway when crossing breeds to the extreme.

Professor MacDonald told a story once upon a time that will illustrate my view somewhat. He told of a man who was starting to breed with a Shorthorn herd and thought they were not giving enough milk, so he crossed them with Holstein; then to enrich the milk he used a Jersey bull; to give them more hardiness he used an Ayrshire; to get rid of the horns he used an Aberdeen Angus; to increase their grazing qualities he used a Hereford; to get a little better colour of milk he used a Guernsey; to get a larger coat of hair and make them tougher he used a Galloway; and, to top it all, to make them more active he used a Texas Longhorn and in the end, all he did get was speed, which, in these days of motor bikes and cheap motor cars was not worth a hang. (Laughter.)

Keep away from that game. You can do without Shorthorn-Hereford crosses.

FEEDING

The next most important point is the feeding. Poor breeding and poor feeding are responsible for more low producing cows in America to-day than anything else and poor feeding is the worst. We know of millionaires in this province who bought good stock to show their friends, because they did not know anything about it. They did not have the knowledge about feeding and so got very poor breeds. I cannot go very much into the details of feeding, but you know if you have been in the business that there is no way to get so poor in the business as to half feed the cattle. You have not a hundred to one shot in getting success if you do it that way. It is a whole story in itself. I could not go into the details here, but one of the most important things with a dairy animal is to give it a start in life. I think I will just say something about calf feeding or what might help to bring the cattle to 2½ years in better form than ordinarily. I would like to speak of my own work in the way of a few government feeding trials. The one thing is to get them to size and usefulness at 2½ years. When born it is a young mammal and must have care and attention. It is no use to take it to the back of the stable and tie it to a rope where it has all that the other cattle have not. It should not be put in a vile smelling place and only fed two days. I do not believe in the practice of allowing the calf to stay with the mother a long while. Generally it can have a drink at first. The breed I worked with will drink when three hours old, providing it has not nursed. If the calf is at

all delicate let it have the food it needs and that is the first milk taken from the cow. There are certain fluids in that milk that is required to give it a start for the first few days. In my work I have found it better to feed them with milk for two weeks and give it to them out of a clean pail. It does not take long to clean the milk pails and you must remember that the young calf has been in a clean place before it was born and it is not accustomed to having dirt in its stomach and its stomach is not as strong as it might be and they get the scours quick enough anyway. The calf once having a set-back does not come up to the others. A drink four or five times a day in a clean milk pail is worth all the buckets of dirty milk you can give him. In about three weeks time the calf is quite husky if he has a clean room. About that time he will begin to nibble at the luscious alfalfa hay that you have here. He will also take a mixture of oats and bran and oil cake, and will take to it earlier and do better on it. A little box at the corner of the stable will do it a lot of good and a couple of spoonsful will start them. Whenever you see them eat more than a handful, give them skimmed milk and when you give them skimmed milk take out the whole milk. Recent investigations have brought out, and they are not yet completed, that there is something in butter fats to produce growth in young mammals. We have usually looked at it from the point of energy and production on the mammal. In that milk there is something that is far better than vegetable fat. But, when a mammal gets to a certain age, there is always a very infinitesimal butter fat in the skimmed milk that you cannot replace with vegetable fats. We have made experiments in this line for three years and we are finding it pays to feed three times a day to calves up to six months old. You must remember that the little calf at two feeds a day has to consume enough at one time to last twelve hours as a rule and that is the way they are usually brought up. We believe in feeding three times a day and feeding a smaller amount. I am sorry I have not the figures with me to show the records of feeding twice, three times and four times a day. The difference in the look of the calf was enough to convince one. Labour amounted to twenty minutes a day at two and three times a day, to weigh all the food, the milk included, to feed the calves, and wash the pails over for nine calves. It did not amount to much and anybody, whether they knew stock or not, when they came into the stable and saw the calves that were being fed three times a day, would say, "What happened to these calves?" It was certainly worth the trouble. In a few months under those conditions the yearling is possibly able to go to the range and rustle for itself. On the small dairy farm on the Coast it cannot do that. If bred in the fall it goes to the grass in the spring and looks out for itself in the summer. The next winter is the time it needs care and feed. A tough yearling heifer does not worry much about the accommodation in the hotel you put her in as long as she is dry and can grow a good coat of hair and has enough to put in her stomach, but they want exactly what you can grow here. They want roughage and a small amount of corn and mangels and a certain amount of sugar beet tops and corn silage. Even if her hair is four inches long, she does not mind it and will do well, and you have not the expensive cost of housing to put against her.

As a two-year-old, you have to begin figuring on production. As far as we have gone with early and late producing, we have not gone far enough to prove anything conclusively. We are, however, making better money out of those bred at $2\frac{1}{2}$ years old. You get returns quicker the other way, but I do not think you make anything

more. At 2½ years it gives you a well-bred cow, and one you can sell for more money and will give you strong off-spring, and in the third year has a better chance of going stronger than the one that has been producing longer.

In reference to the food of the producing cow, you will have your own methods of feeding. This, of course, depends upon the country. A cow that is giving twenty-five pounds of milk of a decent butter fat percentage at all is doing hard labour. You would not think of driving a horse on the road at hard labour or working in the fields without feeding it accordingly. So, do not expect to have your cows producing milk well, because that is hard labour, unless you are feeding them well. Their labour is right at home, and non-spectacular work, and they should be fed with foods that go towards making milk, because it is different from the making of muscle. You should give them succulent food; they should have it because the milk they produce is a liquid material. You should have ash and you have that in your corns and alfalfa and to a certain extent in all the other crops and you have to get the carbohydrates to keep up the energy which you get from the silos. By all means consider a cow as a working animal and give her enough food. The days of getting something for nothing are almost over.

I must cut my address a little bit short, I see. After the man who says there is no profit in this dairy industry comes the main bump. You have to admit that you have to feed intelligently and breed intelligently and yet it is not done and you will, I think, admit it is poor business, and yet few of us like to be associated in a bad business. Why should a person plead ignorance in these days when we have been making such strides in the way of agricultural publicity? Look at the colleges, lectures, agricultural books, and demonstration farms on every hand for our use. We can get advice and help and everything simply for the asking. It must be the fault of the man, and if it is it must be due to the special characteristic in the man which is the same in the mule. That is one of the things we must contend with in our work at the present time.

One of the most important and one of the most neglected phases that I can mention in the three that link us with success, breeding, feeding and selection, is this selection. You cannot select from a dairy herd unless you know what you are selecting for. You can select from type, and the better type it is the better for our herd. But you have to select for profit. There are a good many surprises sprung upon the people who go into dairying. We have tested for men in our country and they have got some surprises; some that they thought were no good turned out better than they ever expected. In the breeding up of a dairy herd one must get down to the systematic way of knowing how he is going to get the best returns. We should use our lead pencils, as Mr. Strachan says, a little more than we are doing. It is better than paying for labour at 20 cents an hour. We cannot make a success of breeding up a dairy herd unless we do use intelligence. We have breeding associations; provincial governments are encouraging it. Dominion governments are encouraging it. You can get milk sheets and all instructions and a personal visit as well will also be made to you. We must get down to these things. We are not all going to fall right side up. We must get down and do the testing ourselves by getting into a testing association. A set of scales and a Babcock tester will do it. Any person can learn it in half an hour. It will take longer at the start. The governments are supplying the milk sheets and they are not going out very fast

either. To do this business properly you must know what your animals are giving you and it does not take much labour. The taking of samples from cows takes about two minutes per cow per day. A lot of dairymen will take more time to fill their pipes than do that and there will be more pleasure in testing in that time than smoking your pipe and you will find that out if you will go into it for a few years.

Now, to give you an example. Mr. Strachan gave you an example of his best and poorest cows and he arrived at it this way. We have a herd of reasonable looking grade cows, some excellent looking by the way, to start with. I do not know anything about the original herd. They were black and white ordinary cows when I started there. I will just select two, not the best, but two that I happened to keep the daughters of and I have track of their grand-daughters. These cows are numbered 13 and 24, fairly good cows, worth probably \$150 when landed at Agassiz, at least they could have been sold for that. Cow number 24, gave 4,450 lbs. of milk, tested 3.98 per cent, made 212.6 lbs. butter, total cost of feed \$47.40. Cow number 13, good looking cow, but a bad number for a stableman, gave 7,123 lbs. of milk. She tested lower, 3.92 per cent. They said she was a skim milker. She gave, however, 292½ lbs. of butter and her feed cost \$48.95. After that time they both had heifer calves and I raised them. The heifers finished up their first lactation period at 2½ years. The heifer from cow 24 was an improvement on the dam. In the first place she gave 5,715.2 pounds of milk and 238 pounds of butter. The heifer from cow 13 was raised in the same way and in the same pen and with the same care as the other and she gave 9,781 pounds of milk and 391 pounds of butter. Comparing profit, number 13 heifer gave \$50 more profit. We would not have known that if I had not weighed and kept an accurate account of the feed. The heifer from cow 24 is going to the butcher shop and the heifer from cow 13 is being kept on. It is a dandy little one. Why? Because every one is taking an interest in it. The barn men know it is better than the other one. They have an interest in that calf that the other one could not possibly expect to get and that is where the whole thing hinges. You work up an interest and that interest helps you a lot. When you begin to know the mothers, daughters and grand-daughters and work up an interest in that way, they will go better. There is something that gives you a pride in your business, and you know this also that when you get a bat in the eye from the tail of a good cow it does not hurt as much as one from an old scrub cow that you have no use for. I was raised almost in a dairy barn and my interest has kept on growing ever since in things pertaining to the dairy barn. A trod-on toe or the switch in the eye does not hurt as much when you know the animal that you are feeding and getting the milk from. It is one of the best entertainments you can get to figure up what you are getting and how much money you are making and then be able to put the money in your pocket. When your neighbour comes to see you is it not worth while to be able to tell him what your cows are doing? It gives us an interest and a pride in our work to be able to give actual figures of the performance of our herd. It puts the dairyman who does so on a par with other business men in the world. When it comes to looking after a dairy herd as they should be looked after, the fellow who does look after them properly has the other fellows backed right off the map.

I see I have taken a little more time than I should, but when one tries to tell a little of what he knows about cows, he gets on a large subject. There is just one



Corn Crop (Irrigated)

little other thing I would like to say. You will find this; that breeding requires thought and patience. Before you start you have to get down and figure out your way. It is not much labour to do the breeding, but you must think about it. You must know the produce and the feeding necessary to get the fine stock. You must study feeding and the way it goes to the cows and the way the cows produce on it and then there is the labour connected with it. It is 365 days of labour each year. You have to do the selecting yourself and that is where the gentleman part of it comes in. All the rest is the hard work part of it. You will be a better citizen and save your labour if you follow diligently that system. (Applause.)

CHAIRMAN: Mr. Moore's talk is so interesting that he has infringed considerably upon our time, but I did not wish to stop him.

DELEGATE: Would you take the calf off the milk quick?

MR. MOORE: No, never. Just gradually. He will teach you how to do it. When he goes on to taking grain you cut down the milk so much. Do it gradually, that is the whole thing. He will begin to take his grain gradually and you should take off so much of the milk the same way.

DELEGATE: Do you say that if they had long hair they would not be so valuable, that is, through keeping them outside? Does it not cost more to produce the long hair?

MR. MOORE: That is a long argument. The housing of the calves will cost so much money and there are so many animals in a barn and they have to pay for it. You have to take into consideration disease and labour. If you put them into a good shed then this has to be taken and fitted into ordinary conditions. If you have a good shed that would cost about \$2.50 an animal to build you should give him plenty of sunshine along with it and by doing that you will keep disease away.

DELEGATE: Is there any limit to the feed?

MR. MOORE: No, there is not. We just give them what grain, silage and roughage they will eat. We feed them full of that. We give the producing animals the cheapest mixture of grain we can get and we follow the markets for that, but we give them about one pound of grain for every $3\frac{1}{2}$ pounds of milk they produce. I have fed two-year-old heifers that, but they had to pay for it. But with the ordinary producing cow you have to figure on every $3\frac{1}{2}$ to 4 pounds of milk to one pound of grain. My herd of dairy cows last year did not eat a bit of hay from last summer until the present summer. They ate mangels and straw. Theoretically a pound of alfalfa of the second or third cutting is worth a pound of bran. It is not quite so practical, but even if not, you can see the advantage. It is something that has to come to you by study.

MR. MITCHELL: Might I ask as to feeding roots to cows?

MR. MOORE: It is better to feed them mixed. If you will feed after milking it will be better. Turnips you need not worry about, as you can grow mangels so well. If you feed other roots you have to fit that into your day's work. There is another side to it and that is you have a quieter animal if you milk before you feed. It generally fits into the time of the day better and you do not keep your man in the barn all night. Milking is of course generally done at night towards the last thing.

MR. STRACHAN: Do you warm the skimmed milk when feeding to the calves four or five times a day or do you give it at the ordinary temperature?

MR. MOORE: No, we warm it. If you feed $1\frac{1}{2}$ to 2 pounds per calf it does not take a large pail to hold it. Take a large can of hot water and set the pail in it. When we are feeding like that we are milking the mother oftener, and we feed the calf every time we milk the mother. When feeding the skimmed milk we just warm it up at nights.

MR. STRACHAN: Would you suggest the amount of mixture that would be the ideal pasture for the dairy cow where we can grow alfalfa. What would you suggest as an ideal mixture.

MR. MOORE: I am afraid that I cannot answer that question. I am working under such decidedly different conditions from what you are here. There are men in the building who could answer that better than I can, I believe. I feed out of the silo all the year round. I am sorry, but we all have our limits.

MR. WOODWARD: I have been asked to ask your opinion on pasteurized milk and ordinary fresh milk?

MR. MOORE: That is getting into an expert dairyman question, but I think the authorities will say that perfectly healthy raw milk is the best.

DR. TOLMIE: I endorse everything Mr. Moore has said. I may say that under the policy of the Dominion Government, where an association is formed, the government will place a bull there, that is, if there are ten or more members in that community. All they ask is that the farmers should lead the bull home and take care of him. We have just placed a bull in Pritchard in the same way to improve the breeds there.

With regard to the keeping of records. One of the most striking things I have ever met with happened in the state of New York. I visited a herd at Elmira in order to look over the World's Champion cow. It had just made the World's record producing 44 pounds of butter in seven days. At the end of a hundred days she had broken the record for 120 days.

In one herd of dairy cattle I saw in that vicinity was a three-year-old heifer that had broken the record for one hundred days. Here is the point I am getting at. There was a man who was breeding Jersey cattle. He fed and milked them well, but he was one of those men who could look into the pail of milk and tell how the cow was producing. He kept no weights or records of any kind. A breeder in looking around to introduce some fresh animals into his herd visited this dairyman's

place and looked over this three-year-old heifer; he saw that it looked good and purchased it for one hundred dollars; took her home and developed her into the record breaking heifer I was looking at. This breeder then went back and purchased the mother which was sixteen years old, and which also made a record in his hands. The point is this, had these cows remained in the dairyman's hands they would have remained one hundred dollar cows, but in the hands of an intelligent breeder they were worth thousands of dollars. In fact, in a letter to me recently, I am informed that in advertising and in the improvement of his dairy herds those cows are worth \$25,000 to the present owner. To illustrate the importance of a sire. At a recent auction sale a breeder paid \$25,000 for a bull. In the city of Detroit, a calf sired by the bull was sold recently for \$20,000.

MR. PRITCHARD: I would like to say a word about the association at Pritchard. We got the bull from the government, spoken of by Dr. Tolmie. It was of Ayrshire breed and I must say that I think Dr. Tolmie used very good judgment in selecting that bull for us.

CHAIRMAN: I would like to call on Mr. Brown, Chairman of the Local Board of Control, to read a resolution.

MR. BROWN: A little explanation may be necessary. When we heard that the Duke of Connaught was going West about the time we were holding this Irrigation Convention, I asked the Secretary to get in touch with him to have him address the association. We found we could not do this as he is not going back East until to-morrow morning when our convention would be over. Then Mr. Lawrence thought it would be a good idea to have him become a patron of this association. He wired him to that effect and received a wire from him that he would be pleased to become a patron. The Chairman has the telegram and the answer received. I would now like to move that this association meet at the station to-morrow morning and that Senator Bostock present him with a badge as a member of this association.

MR. AULD: I would like to second that motion as it would be an honour to have the name of His Royal Highness associated with this association.

CHAIRMAN: You have heard the motion made by Mr. Brown and seconded by Mr. Auld, Deputy Minister of Agriculture for Saskatchewan. The telegram received from His Royal Highness reads:

"Your telegram 25th. His Royal Highness will be very pleased to become patron of Western Canada Irrigation Association, and will be pleased to meet deputation of association at Kamloops station on Friday morning, July 28th. Please, however, remember that His Royal Highness' stay at Kamloops is only ten or twelve minutes."

You will notice that there is a hint to us at the conclusion of the telegram to do things expeditiously. I will, therefore, put the motion to the association and ask them to adopt it by a standing vote.

Motion carried.

MR. WOODWARD: At what time in the morning?

MR. BROWN: The train will arrive here at 8.30 in the morning.

CHAIRMAN: I will now call upon Mr. Fryberger to address the convention.

MR. FRYBERGER: Mr. Chairman, Ladies and Gentlemen,—I was in hopes that I would be allowed to stand down below to say what I have to say at this time because I was afraid of an attack of stage fright. If you will notice the names on the programme you will see that my name is the only one that appears without a handle to it. All the others are so and so, and it is stated what position they hold, but I am a plain farmer. There are two kinds of farmers. The farmer who farms the farmer and the one who farms the land. I am the chap who farms the land. After hearing the discourses of the many speakers of the estimation in which farmers are now held, it makes me feel gratified indeed that I am a farmer. It makes me believe that I belong to a class that is as good as any one else so long as we behave ourselves. I am very pleased indeed to have met you and I may say there are some things in Kamloops that I would like to take back with me. I have, however, many pleasant recollections to take away.

The subject assigned to me is one that will not interest many of you. Perhaps it would be well to tell you where the community I live in is, namely, Bassano Colony, and how it was organized. Bassano Colony is in the extreme western end of the Eastern Division of the Canadian Pacific Railway Irrigation Block. It lies about midway between the Bow river and the Red Deer river and on an average about eighteen miles from Bassano. It was settled two years ago last spring by a number of farmers who came from the state of Colorado. They all have had from five to twenty years' experience in irrigation. They came up here under rather auspicious circumstances and I would like to tell you the notoriety we created for ourselves on our journey. These people were gotten out of the Arkansas valley and the people and the railway in Arkansas resented the idea of these farmers leaving. In fact it was resented so much that the Sante Fe Railway refused at one time to give us cars to come up to Canada in. There was, however, some pressure brought to bear on them and finally they agreed to give us cars and they gave us sixteen automobiles fifty-foot cars, to bring our effects in. They also gave us coaches to transport our people to Kansas city. We then came over the Chicago North-Western to St. Paul from Kansas City to St. Paul. We were running on schedule time and in that distance three engines played out on us. At one time when one of the engines played out they had to put on a construction engine and that brought us along. When we landed in St. Paul the Canadian Pacific Railway kindly put on two tourist coaches and the families all came along with the trains. Our stock was loaded in the train at Colley, Colorado, and it was never taken off until we got to Bassano. They did not even stop us at the line. I suppose they were so glad to get us out of the country down there. However, we are there and we are going to work to make homes for ourselves there. We originally had twenty-three families and they are all there yet with the exception of one. We now have fifty-two families in that colony with a population of 237 souls.

Last year we raised a little better than 300,000 bushels of grain and this year we hope to increase that by about 50,000 bushels.

As to the varieties of crops. We have only been there a short time and have not had much time to experiment. The first thing that concerns an immigrant is some way to make a living and as a matter of fact he has not much time to experiment. I will just mention these things and you will pardon me if I refer to my own experiments, because I happen to know more about my own business than about any one else's, which may appear strange. We raise wheat, oats, barley and speltz. These are not the crops that you will find in the Canadian Pacific Railway Company's literature setting out the kind of crops you can raise, but those are things we have tried and know we can grow successfully. Speltz, rye, corn, kaffir corn, millet, field peas, sugar beets, mangels, rutabagas, timothy and alfalfa. Just a word about wheat and this will also apply to the other grains. There is the matter of maturing wheat under irrigation. The opponents to irrigation in our section say that irrigating wheat in a dry year is all right, but if you irrigate it when it happens to be a wet year, you will not mature it. While we had a great deal of experience with irrigation, we found we had a lot to learn about the climatic conditions where we are located. In 1914 in our section at least, it was very dry. There was nothing at all good and one of the best dry farmers in our section had oats which averaged him two bushels to the acre, so you may know how dry farming fared in that year. Water had never been turned into the canal until that year and the company was not able to get water to us until the first of May, consequently it was too late to get very good results. However, a number of us who tried, got considerable water on our ground and we had fairly good crops. I will tell you of an instance as to the reason why wheat would not mature with irrigation. This is an old story to Mr. Fairfield as he has experimented with the same thing. I might mention that these reports which are gotten out by government men do not seem to have the same effect until some common farmer has the same thing happen to him. I must say, however, that Mr. Fairfield's reports have always been of great benefit to me and if any one follows his advice they will not go very far wrong. In this case I had wheat on summer-fallow and I thought I would grow it without water. In watering some other crops some waste water got down over this particular field and that was about the 1st of June when it ran over and I suppose it watered ten acres. I went ahead and watered the rest of my farm and about the 22nd of June I found that the wheat that had caught the waste water was about four or five inches higher than the rest of it. It was a good healthy grain, some thought it was yellow. The other looked so blue that they thought it was yellow, but I found where I had not got any waste water on, the wheat was actually dying and I made up my mind that I would rather have a good field of grain than nothing so we watered it really twice in that part about the 1st of June and the 22nd of June. After it was watered the second time it grew and matured and was about the best I had that year. The wheat that had not been watered until the 22nd of June grew, but it took the second growth and it never did ripen. The other wheat I let stand so long that the wind threshed it out, whilst waiting for the other wheat to ripen. I know it took the second growth because in many places the gophers had eaten off this grain and when I watered it, it came up as good as where the gophers had not eaten it off. It struck me that the reason many people thought you could not mature wheat crops with irrigation was because they put it in with a view to growing it without irrigation and they would say, "if it does not rain soon, I will irrigate." The crop, therefore, suffers and does not continue to grow, but takes

on a second growth. The tendency is, in a country where we have almost enough rainfall, to do this thing. This year I did the same thing, but I am satisfied if I had made my ditches as soon as I had sown my wheat and three weeks ago had good irrigation on, I would have increased my crop three or four bushels to the acre. We find it absolutely safe to water our wheat up to the 15th of July, providing you have kept it growing all the time. The same thing applies to potatoes as well as to grain. You must not deprive a crop of wheat of moisture and then put a lot of water on it, and expect it to grow as if the moisture was always there. Now, I have some experience with speltz. Perhaps some of you don't know what that is. We used to call it speltz in Colorado. I find it to be a rather good grain so two years ago I sent to Winnipeg and got two and one-half bushels of seed. I grew it under irrigation from seed. From that two and one-half bushels I grew 105 bushels. I brought some of the seed up to the International Irrigation Congress and the Canadian Pacific Railway took some of it to San Francisco and Mr. Rankin tells me I took first prize with it. I have not seen the medal yet, but I think it exists somewhere. Last year I got 2,300 bushels. I would like to tell you what I did with hogs on this. We consider it equal pound for pound with barley. It yields more than barley and we think it is better. I sold five hundred bushels this year to the McKenzie Seed Company for seed.

Of course root crops have been largely explained and you were told how to handle them with irrigation. We believe that we can grow as good potatoes in Alberta as you can in British Columbia. This is what we are going to do in Alberta. We are going to change the market value of potatoes over there. Heretofore you go into a store and ask for potatoes and they will say, "Here are some B.C.'s at such and such a price, and here are some Alberta—much cheaper." We are going to change those conditions under irrigation. We believe we can grow better potatoes in Alberta than any other place in the world. (Applause.) If you take Mr. Fairfield's report you will see that he has had very good results. There is another thing that benefits us that you probably do not get here. That is regarding our so-called high priced land. When in Colorado we did not think that \$50 an acre was too high a price for land because there it sells for from \$150 to \$250 and many men on that land have been renting for \$500 to \$1,000 a quarter. It makes us smile to hear people say that \$50 is exorbitant for irrigated land. However, it is all in the way you look at it. We cannot afford to pay that and summer-fallow it, which is the only system without irrigation. We have to get results in other ways from the land and we believe that potatoes and sugar beets are the solution of the problem. They might tell you that sugar beets will depreciate the soil, and, of course, potatoes do. I have heard men say that if you raise sugar beets for a while you will destroy the fertility of the land. The best crops I grew in my life were crops that followed sugar beets. This year we have grown on potato ground grain crops that are magnificent. Last year a neighbour had potato ground in wheat and he got a fraction better than 70 bushels to the acre. We believe even if we do not make a big profit off potatoes it will take the place of summer-fallow, and consequently it will be of value to us.

Just a word about sugar beets. I really feel afraid to say anything about them, because it may be like touching a match to a powder magazine. Yesterday in going to the Sanatorium we passed land that looked ideal to me. I just thought if I had a farm in this nice flat over here and plenty of water, I would feel that I had

the world by the tail. I believe it would grow immense sugar beets. With us we believe we have the climate, the soil and the water. We have been making some experiments with sugar beets. Last year the company sent some beets we grew to Billings, Montana, and I believe the figures are in the office; they tested 20 per cent. That is very high as you know. We cannot all hope to raise a crop that will test that high in saccharine. We possibly cannot grow them to the same advantage as we grew them in the southern country, but we grow a richer beet and the matter of labour is, of course, a very serious problem, and one that I have been thinking considerable about since last night. I see that in the provinces of Alberta and Saskatchewan they are calling for two thousand harvest hands and the thought just struck me this way, if we had eight or ten thousand acres of sugar beets in there and a lot of labour there to thin and hoe the land by the time the harvest came on that would be done before the labour was utilized for the harvest. It would be a mighty good thing if we had that labour to rely upon and then we could use it for the grain harvest. I am sure we could use these labourers from the 1st of July until it froze up every year and I am satisfied in my own mind that the problem can be worked out satisfactorily. The problem is as to whether we can grow sugar beets in large enough quantities and quality. Then there is the frost. Frost that would injure a grain crop would not hurt sugar beets at all. They are also immune from hail. It, of course, sets them back, but it does not ruin them and it works in with the general idea of mixed farming as good as any crop that you can grow. In a well regulated 160 acre farm you can grow from ten to twenty tons of sugar beets with practically the same farm labour and the same equipment, except that you would have to have a deep cultivator. Of course, they plant more rows at a time also. Then there is the labour, outside of the thinning and the topping. The by-products will more than pay for the difference even if it is high. I believe we can also grow the seed. I believe that is all I have to say. If there are any questions I can answer on the subject of sugar beets, I will be glad to do so.

DELEGATE: I would like to ask you if irrigation in the fall will do well for wheat?

MR. FRYBERGER: In our section of the country, we have practically no sub-soil—it is all soil. I have personally dug down ten or fifteen feet. I want to give you a little experience about that. The first year I dug a root cellar 16 x 30 feet—just a hole dug out by a team. That trench was dug east and west and the next year it laid without covering. Some grains of oats and barley got into the trench and they came up and grew apparently as well as the grain above them in the field. The soil extends down to the quicksand—so the well drillers say—which ranges from thirty to forty feet. With fall irrigation that is the ideal condition. There are several things that enter in that. The first thing is to get your ploughing done before the water is shut off from the ditch. That is the proper condition especially for wheat, because you have to sow your wheat in the spring before the water comes down and if you have sufficient moisture that will bring the wheat to the point where it comes up. If you have not sufficient rainfall to bring it up sow your wheat and water immediately and harrow as quickly as you can get on the ground.

MR. WOODWARD: I believe Mr. Fryberger said something about going into irrigation more extensively. He says he got a first prize. If he goes into irrigation he will find that there is more in the application of water than he is aware of. I have irrigated since 1878, within one hundred miles of Kamloops. The summer of 1878, I first had my attempt at irrigation as a lad. Of course, I did not know anything about it. I had to rely upon my observation and battle through with the water because I did not know anything about its application. In irrigation you have to know your ground, the quality and output of your ground. Then there is the germination of the seed. If there is not sufficient water in the soil to germinate the seed, why you must irrigate. Then again the kind of ditches you have to put in to get the best results. In my experience different kinds of soils take different ditches. On a light, loose, open soil, it is better to put in a shallow ditch. You will irrigate with less water and much faster. On a clay soil, especially where there is alkali, it is best to put in a deep ditch as deep as you can do it so long as it does not interfere with your machinery. The reason for that is that the water will not go down in a clay soil, it will lie on the top of the ground and moisture will evaporate and, another thing, it will have the tendency to bake, and the nearer to the surface the moisture is, the quicker it will bake. By putting your water lower in the ground it will sub-irrigate and in cases where there is alkali, I notice if you do not put too much water on, the surface will look dry but if you dig down you will find it quite moist. Then the next is the particular kind of grain crop and that is after the grain stools, but you will notice that in wheat there is always three or four stalks grow faster than the rest. I don't know that many people have taken much notice of this, but I find that on wheat the average number of stalks that will grow from a grain of wheat is seven. If you only get four that are going to grow up the moisture is not sufficient to get it to grow properly and you are going to lose on that. Now you give the water at that time and these small suckers as we call them will shoot and grow faster than the large ones and will catch up by the time the grain is ready to cut, so at that rate you will get a better yield. The next irrigation is for quality. Now you irrigate when the grain is in the milk and you will get a better quality of grain than you will later on. If you irrigate in the milk your grain will be harder; if you irrigate when it is in the dough your grain will have a larger grain no doubt, but it will be softer and the results are that when you turn it into the mill, the hard grain will give more to the acre. The quality of the grain depends upon the milling quality of the grain. If the grain is large there is not so much flour in it as in the small grain irrigated in the milk, because that grain is fuller; then again, there is not so much bran on the hard grain as there is on the softer grain. In irrigating these are two of the principal points to look after with wheat. With other grains it does not matter so much.

CHAIRMAN: We will now adjourn until 2 p.m.

THURSDAY AFTERNOON SESSION, JULY 27, 1916

CHAIRMAN (after calling the meeting to order): I will now call upon Mr. R. M. Winslow, Provincial Horticulturist and Inspector of Fruit Pests, to address you on

APPLE ORCHARDING UNDER IRRIGATION

MR. WINSLOW: Mr. Chairman, Ladies and Gentlemen,—Apple Orcharding under Irrigation is a very big subject, and I do not know how successfully I am going to cover it. I did not expect that there would be many people here to-day who are interested in orchard work itself and quite a bit of the talk I have prepared is more along the general aspects of it. However, I think I will at least open up the practical side of the business; then it will be up to you to draw that side out.

The apple business here is, of course, a fairly young industry. At the end of 1915 we had about 3,000,000 fruit trees in this province, and of those, 2,300,000 were apples. Until fifteen years ago, in 1901, we only had 435,000 apple trees, showing an increase of about 350 per cent in fifteen years. Of the acreage we have at present of fruit trees, 77 per cent are apples. That is, our fruit industry is approximately three-quarters an apple industry and I believe that the proportion will continue at about that rate or that the percentage of apples and apple production will be greater as time goes on. In 1901 about two-thirds of the apple trees of this province were in the non-irrigated district. In 1915 approximately about 70 per cent of the apples are in irrigated districts; that is, a great part of the expansion of the apple industry has been under irrigation.

With regard to the production, of course the heavy planting of apples took place about ten or thirteen years ago, most largely in 1903 and 1908. There was not much increase in the apple shipments of the province until 1910, and in that year they only amounted to 350 cars. In 1912 it increased to 716 cars of commercial product. In 1914 it increased to 795; in 1915 to 1,537 cars. The increase in the years 1910 to 1915 was 340 per cent in apple production.

At the present time 40 per cent of our apple trees are not bearing. On the same basis of production as in 1915, our apple trees in 1920 will be producing about 3,800 carloads. When we consider it in a general way, we say 3,500. Of the acreage in 1915 about 70 per cent was in irrigation and about 30 per cent was not irrigated. By 1920 I am quite safe in saying that about 85 per cent of our apples will have been produced under irrigation conditions.

There has been a great change in the development of the apple industry. It has not advanced very much in the humid regions, except in some regions in the interior, but has made its greatest development under irrigation. The reasons why the apple industry has rapidly gotten into the irrigation district I will briefly mention to you. First of all has been the development of irrigation systems. The irrigation projects of the interior are well known to some at least of you, and it has been the systematic colonization of those projects which fostered the tremendous increase in the apple acreage in the interior. Another thing is that, whereas on the coast and other sections the apple industry is more or less an adjunct to every farm, in the early time those who came here did so primarily to go into

fruit or orchard cultivation and with the other lines of agriculture as side lines. The primary reason for many of the people coming into British Columbia was to engage in orcharding, and the great majority of them have kept to that intention. Another factor that helped to develop orcharding under irrigation is the fact that these irrigation areas are fairly compact and closely settled communities, and that has resulted in greater profits from the business. The man on the land has been able to exchange notes with his neighbour and there has been more or less of a feeling amongst the apple growers that co-operation in efforts brings better results than individual effort and there is every reason for the people to stand together. That feeling has helped a great deal to help the orchards planted under these irrigation projects. Another factor which has helped orcharding under irrigation conditions has been the great proportion of the soils of the irrigation districts being well suited to apple culture. I need hardly say, of course, that the fruit produced under irrigation or that the apples produced under irrigation are usually of a higher colour and better finish and freer from insect pests and malformations than apples grown under humid conditions. One of the most trying things in humid areas is apple scabs, which in the dry districts is unknown. In Vernon and other parts of the irrigated section the rainfall has been unusually heavy and therefore apple scab has been quite serious under irrigation. Another factor is the increasing of the yield under irrigation. As a rule apple trees bear heavier there than they do in the humid areas. Finally, and in this I have reference particularly to commercial production, it is much easier to organize market facilities than it is in the orchards scattered in the humid areas. Now, those factors all help to explain the preponderating development under irrigation conditions and they may also be taken in consideration in comparing the irrigation districts with the humid districts and absolutely by themselves as the reasons why our apple industry is drifting more and more into the dry belt. Now, against [those favourable conditions there are a good many difficulties and at quite a number of times in the past few years our areas have been reduced pretty close to disappearance. Of course, I am often accused of being a pessimist. As a matter of fact, my position exists because the fruit grower has trouble and my efforts lend themselves by government assistance. However, I am more closely associated with the fruit growers' troubles than with their successes. I suppose you always notice that if a man puts a thousand dollars in the bank at the end of the year's operations, you do not hear so much about him as you would if he had to go to the bank at the end of the year and get a thousand dollars.

Amongst those problems I thought I would classify my subject under eighteen or twenty different headings, but I do not think I will now do that as it would weary you too much.

There is one very big question and one that appeals to me almost more than any other question under dry belt conditions. There is no soil in the world that will not wear out and after all heavy crops of fruit make as great demands upon the soil as any other crop which is or can be grown, but there has been special difficulty connected with the fertility of those soils that makes it a subject of importance. As you all know, or at any rate believe, we started off in the dry belt with a high percentage of mineral salts in the soil. Under irrigation, soils of that character

become very fertile indeed. Through all the centuries there have been accumulations of potash and lime, and all those mineral constituents are realized under irrigation. That is, in the first few years under irrigation there is a large percentage of those constituents available. Further, despite the fact that the dry belt soil is very low in humus, it must be remembered that humus soils hold valuable nitrogen and humus soils therefore while of a low percentage of nitrogen, when brought under cultivation, that nitrogen is available. It can be seen therefore that our dry belt soils, when brought under cultivation, possess high fertility. Further, all of you know that a young fruit tree not bearing fruit heavily makes comparatively small demands upon the soils and so that during the first six or seven years of growth of our apple trees, the problem has not been to get growth, it has been to keep it down. However, conditions change. It is soon possible to exhaust the readily available humus in the soil. Under irrigation there is the leaching which seems inevitable with irrigation in the dry belt and when on top of that the orchard comes into bearing at six or eight or nine years, there is a heavy drain made upon the fertility of our soils.

Down in Washington, in the Wenatchee and Yakima valleys, they are a few years ahead of us. They faced, a few years ago, the problem of reduced yields, reduced growth and that yellowing of the foliage which denotes impoverishment of the soil. I visited those districts and I saw that the fruit growers in the district were very much concerned indeed with the problem of keeping up the fertility of the soils of their apple orchard. Now this exhaustion is bound to come. There was a big mine of fertility in those soils to start with but it was taken out at a rapid rate. The usual reply is the application of barn yard manure, but in our districts and the districts across the line, the great percentage of land under irrigation is devoted to orcharding and very little land is devoted as a rule to alfalfa and other crops for stock feeding. The problem of obtaining barn yard manure is an acute one in the dry belt.

We have just been getting up against this question of fertility in the last few years in a general way. The problem becomes acute at first naturally on the lightest soil where, in conjunction with the lightness of the soil they have had fairly heavy crops of fruit. By the way, an average crop of apples takes as much fertility from the soil as a good crop of wheat and the man who takes off a good crop of apples every year for four or five years faces the same proposition as the man who takes off good crops of wheat for four or five years.

In the Wenatchee country a number of the apple growers had tried alfalfa in their orchards. One of the most intelligent men and a grower down there told me that despite large applications of barn yard manure on his orchard the men who had alfalfa in their orchards were producing more fruit and on the whole a better quality of fruit than those who had fairly ample supplies of barn yard manure. A number of our growers are now experimenting with alfalfa. This has been going on now in a general way for two or three years. There is a great deal more to be learned from it in practice than by theory. Down in the Okanagan valley I have seen a great many cases already where young orchards have been destroyed by alfalfa being sown between the trees and carelessly handled. I have also seen where alfalfa grown between the trees has brought undesirable results despite every effort on the part of the owner to give the trees a fair chance. That is where he cut

the alfalfa and let it rot on the ground to supply fertility and gave an ample supply of water for both trees and alfalfa. On the other hand, a number of our orchards, some of them most productive, are now in alfalfa and have been for some time, and are apparently giving better results than they did previously under clean cultivation. It is yet too early for anyone to say, except in the most general way, just where alfalfa can be used in the orchard to advantage and where it cannot, but as a rule I would say that alfalfa sown all through the orchard is not likely to be a success unless the soil is reasonably deep and a reasonably strong soil and there is sufficient supply of water for both trees and alfalfa, and the owner is reasonable about it and does not insist upon taking three crops of hay out of the orchard without a return.

In the last few years, especially on the orchards which were planted from 1904 to 1907, returns have not been high. The average yield of fruit per acre has not been anywhere up to the expectations of the growers, and financial conditions have been bad. This has discouraged men on ten-acre lots, especially where they do not own horses themselves to put their orchard down in clover and grasses and pay a man to come in and cut the hay and haul it off. Under those circumstances, orchards have gone back very rapidly. In other cases the orchards have withstood it very well.

On a practical basis, I have not any recommendations which can be made at a meeting of this kind. In any particular orchard, knowing the water supply, the soil and the condition of trees and the man who is handling it, a man can say with some certainty what will be the results under different methods of cropping the orchard, as to alfalfa, clover or hay, but from the platform here, on the whole it is safest for me to say that it is a thing to go very cautiously about.

Some of our growers are meeting the soil fertility question and soil economy question by having orchards in alfalfa or hay and feeding it to a few cows and also at the same time running a few hogs. In one case I know of a man who is still producing excellent crops of fruit on a ten-acre block of land and at the same time is supplying the bulk of the feed for two horses and a cow, and he also keeps a hog or two. I really did not think that ten acres would do all those things fairly well, but he seems satisfied with his results.

There is another question of greater concern in the dry belt of British Columbia than it is anywhere else in the province to my mind, and that is the question of winter injury or frost injury to our trees. As a general observation, it might be stated that our interior districts are freer from blossom killing frosts than most districts. The amount of injury from spring frosts to fruit is very limited, but the amount of winter injury is high. In fact, winter injury has caused far more loss here than all the pests and bugs we have had, and I sometimes think, more than we are likely to have.

Winter injury has been serious only twice in the last twelve years. Once in the winter of 1908-9, when we lost a large proportion of our peach trees, and then the winter just passed (1915-16) which has been very severe on apple trees. This last winter injury has not been true to form. Varieties which seemed to be amongst the hardiest have suffered more than others supposed to be less hardy, and which from past experiments seemed to be more delicate. The only observation I can make from this platform is to say that the past winter has shown that orchards cannot be neglected with impunity. Any orchard which showed a soil with lack of fertility,

lack of cultivation and other deficiencies, has shown more suffering. At the same time there has been a large percentage, in fact, of less fairly hardy varieties well cared for and under as favourable conditions as we could have that did not seem to have suffered. The only general recommendation on winter injury that one can make is, as I have stated, always realizing that if we have winters as we had last year, it means re-organization of our apple industry.

Another problem which comes very largely from the newness of the district is the question of suitable varieties. All of you have thought in Canada the problem is to find winter varieties of apples, hardy enough to stand our winter climate and yet be fruits of sufficient colour and flavour as to be favourable to our markets. There is one very interesting thing in this connection in which you might be interested. As most of you know, the most satisfactory apple in our district is the McIntosh Red, that originated in Canada and has been favoured in the East and in the West. We have just concluded a five-year study of the cold storage qualities of the principal apples of British Columbia from all the important districts. One of the most interesting deductions we have been able to derive from it is that McIntosh Red becomes with proper handling one of the most superior of cold storage apples. We have in Victoria, McIntosh Reds in cold storage which are equal to any of our McIntosh Reds of last fall. The fact that the McIntosh Red was a cold storage apple was shown last year by the Dominion Government. It was shown at Victoria owing to the fact that we are so short on the long keeping varieties which our neighbours to the south are able to grow to better advantage.

One of the most discouraging things about the question of variety is the fact that few of our growers keep any records. This morning Mr. Moore gave valuable ideas on how to know what your individual cows are doing. I was in an orchard in Ontario which was fifty years old and I asked a man, born and raised there, what the yields had been on that orchard and very much to my surprise he said that in the fifty years of its history that orchard had not borne a crop of apples large enough to pay expenses, and when they saw how it was going they kept the expenses down. In California I was going over citrus groves and was shown groves that had been a source of study and investigation for twenty years in an effort to find out why those groves did not bear and could not be made to bear. Other groves quite near them were growing very well indeed.

Of course, our industry is very young, but there is practically no information to be had from the majority of our growers at the present time as to the relative production and capacity of the different varieties and I may safely say the same as to the bearing of individual trees. Of course, individual trees present a tremendous problem, but yet when a man is on ten acres of land and his production on ten acres of land could not be more than an ordinary income, that ten acres of land gives him an opportunity to get intimately acquainted with it. It is surprising and to me discouraging, that so few of our growers have kept any absolute records of yields of varieties, let alone of individual trees. Mr. Moore said this morning, further, that there were milk record cards and milk record sheets and full instructions of all those things for the milker, and for weighing and Babcock testing. The same is true in the fruit industry. We have tried to get fruit growers interested in keeping records, but so far have had only a small percentage of the fruit growers giving us a satisfactory record. There is a tremendous amount to be learned

of any individual block of Jonathans or McIntosh Reds and even if it is a block of twenty-five trees there is the opportunity to get better results by keeping a record. I have seen in one district here one very striking case. Twelve years ago they planted an orchard with double fillers, Transcendent Crabs being the double fillers. Those trees bore nothing for eight years. With the experience then gained, a block of Transcendent Crabs, five years old, was handled differently. These also were fillers and the object was to get all possible production out of them before they were taken out. In this case the owner was willing to take it over and, by a different method of handling, those Transcendents produced from the five-year-old four boxes to the tree and they bore only a like crop last year and this year they have a promise of five boxes of fruit, that is, those trees are averaging about ten boxes of apples before the others on the same soil had produced anything. Probably this is an extreme case but it shows with a little difference in handling you may make all the difference between an absolute failure and an absolute profit. I may say that in the first place those Transcendents, by the time they were nine years old, were so large that the problem was to get them pulled out at as low a contract price as possible.

You have said so much about the irrigation question and the problems it brings up, and I really do not think I could discuss anything about that with advantage. All of you who are acquainted with conditions here know that, as stated in the resolutions, the irrigation companies have found themselves face to face with unexpected difficulties and in those difficulties are involved the growers who relied absolutely upon the companies for water. However, in one way or another the companies have been able to get down a fairly adequate supply of water. In some cases certain municipalities, such as Penticton and Summerland, own their own water systems and are steadily year after year putting in more permanent works as funds are available and are gradually getting into fair shape. However, the irrigation problem is a big one.

Sometimes when I hear criticism from the markets both on the coast and the prairie as to the apple grower and the large profits which he must be receiving, I feel sorry and sometimes I cannot help seeing the humorous side of it. The apple and fruit grower generally has heavy problems on his side. On the economic side one question has been spoken of several times—that is, the problem of the ten-acre block. I know, and I suppose many of you know, ten-acre properties returning a satisfactory living to the owner. On the whole the ten-acre property has great drawbacks and especially if the average selling price of the product is run on a low level, the man on the ten-acre property will find himself in a difficult position. I know of one ten-acre block of orchard land down in Summerland which for the past three years has averaged the owner sales of over four thousand dollars, netting him, in fact, after allowing interest on the investment, something like two thousand dollars a year for his own labour. It shows certainly that the ten-acre proposition is not impossible, but the fact remains that for a great many of our people it has proved a difficult proposition. Consolidating small properties into large ones when money is scarce offers difficulty and very little progress is being made in that direction. Small areas certainly do handicap the owners in an effort to build up other lines of income. It especially handicaps them in an effort to get into stock without at the same time risking or injuring the value of the orchard.

One of the class of inner crops in one district which has obtained proportions is a class of tender vegetables, not grown to any extent at all in the prairie provinces. In some of our districts in British Columbia there was no production at all of tomatoes, cantaloupe, cucumbers, peppers and other heat-requiring vegetables. Last year one district shipped out \$80,000 worth of such vegetables, practically all grown between trees. In many cases that made all the difference in the operation of the orchard. However, there is beyond this even the question of barn yard manure. In one case the owner of such a crop has had considerable profit and he is now trying vetch and mammoth clover. In other districts onions, potatoes, cabbages and other of the coarser vegetables are being grown to some extent successfully. With truck crops as with trees themselves, there is a time coming sooner or later when soil fertility becomes the paramount question.

I did not really intend to speak upon how to handle dairy cattle, hogs or chickens, which is beyond my scope. However, the Chairman has just hinted that my time is up and I thank you for the attention you have shown me. I thank you. (Applause.)

MR. WILLIAMSON: Why is there such a spread in the price that the consumer has to pay and the price the apple grower gets?

MR. WINSLOW: Why is there such a spread of price between the producer and the consumer? You can say there is not or you can ask what it is. There are two commissioners on my staff and we have been investigating that for three years. The spread is due to a number of things. One is the grip which the middle man has on nearly all classes of commerce. In looking into the margins in the fruit business we came to the conclusion that considering the character of the commodity there was not a greater spread in the case of British Columbia for these than in other commodities, such as drugs or groceries. Some progress has been made in reducing the spread, but from the producers' end action along that line has to be taken very carefully indeed, because the producer absolutely depends upon the middle man to move his product. When you have your car on the track there is no time to argue whether the middle man will get twenty-five or thirty cents. I cannot offer any solution to the question. A good deal of study to the dispute has shown me that the consumer can do more on his end of the dispute than the producer can. I have not answered your question because I cannot answer it.

CHAIRMAN: I will now call upon Mr. R. H. Campbell, Director of Forestry, to address the convention. (Applause.)

FORESTRY

MR. CAMPBELL: Mr Chairman, Ladies and Gentlemen,—I have not had an opportunity for a couple of years of attending the conventions of this association. I used to attend them and found them very enjoyable and made very good friends at those meetings, whom I am always glad to meet again. At the time I was attending those meetings I had something to do with water, but now I do not handle the water business at all and that is one reason I have not been here. Of

course, in Canada, we are apparently always getting nearer to the universal use of water, because it looks as if soon we will not be able to get anything else. (Laughter.)

My special work now is to look after forests and we consider the question of forests and their welfare a very important question. In Canada we look upon it from one point of view and in Europe they look at it from another point of view. It is rather interesting for us to get into their point of view to see what is the final way to look at the forests. A few years ago a commission appointed by the Imperial Government to look into the question of forests and forestry management presented its report and one paragraph in summing up its conclusions pointed out to the Imperial authorities that it was very important that steps should be taken to protect the forests and develop them as far as possible; that the countries of Europe were taking very active steps in that direction and felt that it was a good thing, and in spite of the protection given forests in the United States and Canada, the commission was still of the opinion that the crisis was bound to come. Then, again, one of the gentlemen in England who is very much interested in social conditions was making an investigation into the conditions in Belgium. Belgium before the war had 652 people to the square mile—more than one to the acre—which is the most thickly populated country in Europe. The farming there is very intensive. The farms are small and the land is not particularly rich generally. It has to be assisted very much by artificial manure, but in spite of that fact, this investigator reported that Belgium not only kept their forest area but was extending it, and upon enquiring as to whether it paid to do so, he was told: "We are not asking whether it pays or not; what we are thinking about is the betterment and improvement of our social conditions." That was the point of view in that thickly populated country from which they look at the forest, and that was the reason why they considered it necessary to develop their forest area.

The forest is very useful in many ways. I think it means very much to the social side of this country. The building of homes is dependent upon the product of the forest and we could not live in the comfort we do if we did not have the forest supplies at hand. It also assists every industry. The mining industry depends upon the forests, particularly the coal mining industry; also the development in connection with the distillation of pine oil from pine wood in Canada. Then upon the question of water supply the forest areas have a particular bearing. The sources of streams are, as a rule, in high forests. There has been discussion as to the effect of forests upon the water supply and there has been a difference of opinion about it. The general observation and impression has been that the forest increased considerably the regularity of the flow and actually increased the flow of streams. In order to demonstrate finally what it was, the forestry service of Switzerland started a series of observations upon two valleys contiguous to each other, containing streams. While one was in the midst of a forest, the vicinity of the other valley was deforested. The final reports are not yet public. The preliminary report is and it shows that the forest valley streams had a large regular flow and the flow was much larger than the flow of the streams in the deforested valley. The United States Government is making the same experiment in the vicinity of Colorado Springs so that a careful scientific investigation will confirm the general impression. That being the case, the Government here has set apart as forest reserves a great many of these lands from which streams flow, the object being to ensure as far as

possible the regularity of the flow and also to keep control of the reservoirs in the reserves which may be used at some time later for holding back the flood water to be used at a later period. We are doing considerable work in protecting the forest and trying to make it fulfil that amongst other functions and we believe it is of the greatest importance in connection with the water supply and the social condition of the people. I was very much impressed with that fact when visiting the Old Country a short time ago. The people I met in Scotland were lamenting very much the depopulation amongst the clans in the Highlands and they were counting upon the re-forestation of the hills as one of the main factors for assisting an increase in population in the Highlands. We are sometimes met with the argument that in establishing forests and keeping the lands in forests we are working against the development of the country and working against the increase in the population, but I believe that from the experience of the other countries an increase in the forest area improves social conditions. I believe myself that in working for the protection of the forest we are working for the betterment of the social condition of the people. Certainly no forester would keep back the population of his country. It makes his work easier to have an increased population. By intelligent forestry work I believe it will mean controlling the flow of streams to agricultural lands and that can be accomplished by forest protection, and the storing of water in reservoirs therein will regulate the flow of the water in the streams and the agriculturists will reap the benefit. So that the attitude of the forester is not one of decreasing or holding back settlement, but one to advance settlement and population. I thank you. (Applause.)

MR. CHAIRMAN: The next item on the programme is that of Professor W. H. Fairfield, Superintendent Dominion Experimental Farm, Lethbridge, Alberta. (Applause.)

Mr. Fairfield then addressed the convention as follows:

GROWING WINTER FEED UNDER IRRIGATION

The production of forage crops and the raising of live stock must necessarily go together for if we wish to keep live stock we must have forage crops to feed. On the other hand without live stock we have no way of profitably disposing of such crops after they are raised.

By the interest that has always been shown by delegates in past conventions of this association in discussions dealing with the keeping of live stock on irrigated farms, I am sure that we all fully appreciate the important, in fact, the imperative necessity of combining a certain amount of stock raising with our other operations on irrigated land. This is realized not only by the farmer on the irrigated lands on the prairies who is farming extensively, but right on down to the intensive farmer in the rich valleys of British Columbia, for even the peach grower with his five or ten-acre farm is beginning to appreciate the advantage of having a few milch cows.

A farmer on irrigated land has particularly favourable conditions under his control for the production of all kinds of forage crops. The amount of forage that is produced on a farm where irrigation is not practised is liable to be decreased

materially by lack of rain at the right time and on the other hand there is greater risk of having the crop damaged while being harvested.

I have been asked to speak upon this subject of "Growing Winter Feed under Irrigation." One cannot deal with such a subject as this in a very comprehensive manner without at the same time taking up the subject of live stock. However, time will not permit this and it will, perhaps, be quite fitting for me to stick closely to the subject assigned to me. If you will be good enough to bear in mind while listening to the few remarks I have to make, that the sole object of producing forage crops is for the maintenance of live stock, not only for the profit that will be derived from them but for the fact that we will be maintaining and increasing the productivity of our soil by so doing.

There are two broad classifications that forage crops naturally fall under—Annuals, those sown and taken off in the same season; and Perennials, those that keep growing from year to year after being sown. The latter class, that is, the permanent hay crops, are more important than the annuals.

Taking up annuals first, and naming them in the order of their probable value, we will have:

Corn;

Root Crops;

Green Feed—under which head will be: oats, wheat, etc., cut before ripening;

Millets.

The advantage of annuals is that a crop is obtained the current season, while with the perennials or ordinary hays no crop worth considering can be had the season the crop is sown.

Of the annual forage crops that can be grown satisfactorily at this latitude, corn will give the greatest quantity of roughage. In the irrigated districts of British Columbia this will, as time goes on, be a much more important crop in my judgment than it is at the present time. On account of the longer season, it will produce better than on the prairies. Especially in districts where fruit is grown to a greater or less extent it will be found to be a satisfactory crop to grow between the trees, at least while they are young.

Corn fed as silage is best, but it can be stooked and left in the field in a cured condition and fed as required. It is very palatable to all stock and is rich in energy and heat-producing constituents, and when combined with some concentrate, excellent results are obtained. When fed with some fodder rich in flesh-producing constituents such as alfalfa or clover, very little concentrates, if any are required. The stage of maturity it is desirable to have the corn reach by cutting time is for the ears to be well developed and the kernels just about reaching the glazing point. This should not be difficult in most irrigation districts in British Columbia if early varieties are used, although in Alberta and Saskatchewan the season is too short to allow ordinary fodder varieties to reach this point. The yield of fodder weighed green as cut varies from 10 to 30 tons per acre. Under average conditions in irrigated areas in British Columbia there should be no difficulty in getting the crop to go 18 to 20 tons per acre. To get the best results a silo should be used. However, as previously mentioned, it is not absolutely necessary to have one. If silage is made, the corn should be cut as it is put in. If fed dry, it should be cut as fed, for if a quantity is cut up and placed in a large pile it is inclined to ferment.

Roots come next in importance to corn as an annual forage crop. The actual tonnage per acre of turnips and mangels is not much different from corn, but it requires more labour, at least at certain times in the season, than is the case with corn. This is a disadvantage for in a new country labour is scarce and we are compelled to consider the cost of producing any particular crop on our farm from a distinctly different angle than we are accustomed to in a country where labour is relatively cheap and easy to obtain. The viewpoint that we are forced to take is: How many tons per man can be obtained from a certain crop as well as how many tons per acre—and in many cases we know that is the much more important consideration. Another important point that has to be considered when determining the cost of producing a certain kind of crop on our farms is not only the amount of labour that will be required, but just the particular time during the summer when it will be required so as to know whether it will conflict with other farm work. The reason why it is difficult to arrive at the cost of production of any particular crop on the farm expressed in exact figures, is because it is so hard to correlate these various factors in a practical manner.

In comparing roots to corn fodder we have to take into consideration the kind of stock to be fed and whether the farmer has a silo. It is generally conceded that under ordinary circumstances a ton of corn silage can be produced much cheaper than a ton of roots. If, however, a farmer has not a silo on his place he should raise some roots to take the place of silage for his milch cows and so provide succulency in their winter rations.

GREEN FEED

In irrigated areas on the prairies and no doubt in most parts of British Columbia where irrigation is practised, the cheapest annual forage crop to raise is "green feed," that is, one of the ordinary grains cut before it ripens and made hay of. Under ordinary circumstances oats give the greatest tonnage per acre and the quality is excellent both as to palatability and food value. If horse hay is required, wheat is a little more desirable although the yield will usually be somewhat lighter.

Millets are not as a rule very satisfactory on the prairies as the seasons are not always warm enough to produce heavy yields. In most of the valleys of British Columbia they should do better, but the main objection is the cost of the seed, which is, as a rule, much higher than grain.

PERENNIAL FORAGE CROPS

Coming now to the perennial forage crops, we are taking up the most generally grown and in the aggregate one of the most, if not the most, valuable products of the irrigated lands.

In Saskatchewan, Alberta and to a limited extent in British Columbia, our native grasses along the river and creek bottoms are irrigated by the wild flooding method and large quantities of hay are produced. This is probably the simplest form of irrigation that can be practised. It is not an economical way of utilizing the water, but, on the other hand, it requires the minimum amount of labour and appears to be quite satisfactory where water is plentiful and the character of the

soil is such that the alkali problem is not developed. Our delegates from the Cypress Hills Water Users' Association fully appreciate the value of this method of utilizing the spring flood waters which would otherwise go to waste.

In the growing of timothy under irrigation on the prairies, one interesting point has been brought out by hay growers in the Lethbridge district during the past decade. That is, that a more satisfactory timothy meadow can be obtained by sowing the seed on the native prairie sod without ploughing than when sown on cultivated land. The common practice is to sow the seed and double disc the land when it is somewhat moist. This does not cut into the natural sod enough to injure it. In fact it stimulates the growth of the native grasses and covers the timothy seed sufficiently to prevent it being washed away when the land is being irrigated. The hay produced from a meadow of this kind is a mixture in which timothy usually predominates. The native grasses which it contains greatly improve the general quality of the hay.

ALFALFA

With reference to the cultivated hay crops for irrigated lands, it is needless to point out that alfalfa has a place of its own. No other crop can approach it in its ability to produce a large tonnage of very rich hay. Alfalfa and irrigation are always associated in our minds, although it is being grown more and more under humid conditions, it is only under irrigation that it reaches its highest perfection. It is peculiarly adapted to irrigation in that drought never kills it, and that when moisture is applied any time during the growing season it responds rapidly with a luxuriant growth. It only asks plenty of sunshine and warmth with a sufficient supply of moisture, and it grows continuously from early spring to fall frosts. It is different from the grasses in that while they require plenty of moisture during the early part of the season (in late April, May and June) and will fail to make satisfactory growth if there is an extended period of drought during this time, alfalfa is not affected further than it fails to make as much growth at this particular time as it otherwise would, but during July and August when other grasses are failing it makes its most rapid growth.

One thing that gives alfalfa a value entirely distinct from any of the grasses is that it is such a wonderful soil renovator. Owing to its deep rooting system, it far exceeds any of the clovers in this regard.

For a crop to plant between fruit trees it has certain disadvantages. On account of the large roots it is more difficult to plough than clover, which is more commonly used in such places. With a proper plough, however, it is not so difficult to turn down as is commonly believed.

In conclusion, I merely wish to point out that before the farms on our irrigated lands can reach their highest stage of productivity, no matter whether they are in Saskatchewan, Alberta or British Columbia, there must be carried on them a goodly supply of live stock. I know that in making this statement I am only reiterating what is being said on every platform from which a speaker on agricultural topics is heard, and it is being preached continuously by the agricultural press—not with special reference to irrigated farms, but with reference to all farms, still the success of the farmers on irrigated lands depends more on their going into

diversified farming even than the farmers that are operating without the aid of irrigation. On account of the added expense of irrigation he, the irrigation farmer, is compelled to farm on somewhat smaller areas and therefore he must farm just that much more intensively. To do so and to get the best results possible, he must maintain a proper balance in his operations. He must utilize all he produces to the very best advantage. (Applause.)

MR. CHAIRMAN: I am sure you have listened with great interest to Mr. Fairfield's address. There is only one thing that struck me, and I do not know if it did the audience. Mr. Winslow and Mr. Fairfield do not seem to agree as to which is better to grow, clover or alfalfa, in our orchards.

MR. FAIRFIELD: I do not profess to be a fruit grower and the question of growing alfalfa between fruit trees would be a question that should be decided by the fruit grower himself. I thought I listened very closely to Mr. Winslow's remarks and was under the impression that I did not make any statement to conflict with anything he said.

MR. WINSLOW: The growing of alfalfa is in the experimental stage and in some orchards in this province it has given excellent results, while in other orchards disastrous results have followed it. I suppose the real result is somewhere half-way. I hope that before long we will know more about it. I think that in fruit growing the competition is keener and the man who can grow alfalfa successfully in his orchard will be successful, but it will be a few years yet before we are going to be able to lay down rules as to when it can be grown, and where, and whether it can be grown successfully.

MR. WOLLASTON: The last speaker said something about corn. I agree that it can be grown in British Columbia. Now, some of us have planted corn and mangels and roots, and while I think the roots and mangels did not have any detrimental effect on the trees, I think the corn did have some. The corn matured profitably, but I do not think it had a good effect upon the orchard.

MR. THORNBUR: I did not want to get into this question, but for some years we have grown corn and roots and alfalfa and I will just tell you what we found out in regard to them. We found corn the best inner crop we could grow between our trees because it compels us to give extensive cultivation to get good results from our trees. I have grown it myself for some years. Be sure to give it plenty of water at the last of the growing season in order that your trees will not get dry.

In reference to alfalfa in the orchard. We have come to the conclusion that if we use it thinly there it is a decided benefit. We have worked side by side with a great many plots. I think we had forty of them altogether. Alfalfa was sowed thickly in some plots so that it grew fine hay. We could not work up the soil and it was injurious to the trees in the orchard. However, where it was sowed thinly, in the spring we would go in and work up the soil six inches in depth, and it was always beneficial. We are now working it this way. Our alfalfa is put in, worked up evenly, harrowed down, our irrigation ditches put in and then, after cutting,

we immediately disc again. First and second cuttings are always taken out. If we want a third cutting we again disc up, and harrow down our ditches again. We do not reduce our cost of operation as much as we would like to, but we get more hay and it does not hurt our trees and we have been doing this for eight years. I think there is a big opportunity in orchard growing for this work.

We must have returns from our labour in the orchard and our interest and taxes first from the sod crops before we expect to take anything from the fruit at all. That is the only plan we work upon in our orchard work at the present time. If you seed too thickly and then quit or neglect that part of your work and expect to come along later on and cut the hay and take it away, you had better cut your trees down because you will find them in the way all the time.

MR. STRACHAN: I would like to say that my experience with trees has been something as follows: We planted apple trees last spring and I thought a good way to cultivate between the trees would be to plant corn. The corn was planted forty inches apart and the tree took the place of a hill of corn, so that when cultivating the hills of corn we cultivated the trees. About the middle of July the corn was up six feet or more and the trees were at a standstill and are still at a standstill. They are growing, it is true, but they have never recovered from the effects of it. That was my experience last year.

MR. THORNBUR: For my own information, would you mind telling me how tall that corn grew?

MR. STRACHAN: The tall corn grew six feet.

MR. THORNBUR: We do not advocate a very high corn, not any higher than six feet. We have had 2,400 acres in at a time. I can conceive, however, that where you put in a tall growing corn it will smother the trees or take the plant food from the trees. Last year I conceived the idea that a sunflower crop would be all right. So I tried it out before recommending it to any other man. We tried it in an acre plot. The seed in the row was about eighteen inches apart, just one plant in a place. Those sunflowers produced a growth of about eighteen feet and I was very much concerned as to whether I had killed the trees in the orchard. You can imagine what it looked like with trees six years old. By giving lots of water we got a good crop of apples and now, this year, there is a splendid promise of fruit on the apple trees. We, however, insist upon plenty of water at the close of the growing season, no matter what crop it is. Where we let them go in dry we injure them almost every time.

MR. CARRUTHERS: Have you never found difficulty after having your hay cut by it being necessary to irrigate your fruit trees and not being able to do so on account of your hay?

MR. THORNBUR: Where there is danger of that we cut our ditches before we cut the hay. We get the water in very quickly after taking the hay out.

MR. WINSLOW: I may say there is no difference in Professor Thornber's experience than those that I have heard from the floor. In Lewiston they have a much longer growing season than in British Columbia. I may say that we have found it possible to grow alfalfa between our young trees with good success. A man who found that we were doing it attempted it himself in a district where the soils were entirely different and the results were not at all satisfactory. In British Columbia we are watching the thing very closely, but it will be some little time yet before we can say definitely just what is what in reference to this.

MR. RANKIN: (Reads latest war news off the wires which is received with interest.)

CHAIRMAN: I will now call upon Mr. J. R. Fryer, of the Seed Branch, Department of the Interior, Calgary, who will address the meeting on

THE PRODUCTION OF HOME-GROWN FIELD AND GARDEN SEEDS TO SUPERSEDE FOREIGN IMPORTATIONS

MR. FRYER: Mr. Chairman, Ladies and Gentlemen,—We have been listening to suggestions as to what to grow in orchards and amongst other things have been mentioned the growing of alfalfa. I was very glad to hear Dean Klinck refer to the necessity of testing corn in the ear. As you know, to your sorrow no doubt, corn bought in the shell is very poor in germinating qualities. Mr. Bark, in an address, also suggested the growing of clover and garden seeds on a business basis.

My subject, as announced, is: "The Production of Home-grown Field and Garden Seeds to Supersede Foreign Importation."

Before the outbreak of the present European War, Canada was almost entirely dependent on foreign countries for her supply of field root and vegetable seeds. Germany and France contributed very largely in meeting our demands for such seeds. The following statistics of importations of a few kinds of seeds during the year 1913-1914 will convey some idea of the quantities of these seeds obtained from foreign countries annually.

IMPORTATION OF SEEDS INTO CANADA, 1913-1914

Beets and mangels	1,285,198 lbs.,	three-quarters of which came from France and Germany.
Carrot	32,687	" from France.
Turnip	126,687	" from France.
	224,162	" from Holland.

RECEIVED AT TORONTO PORT, YEAR 1913-1914

Radish	4,621 lbs.	
Cabbage	1,865	"
Garden Beet	6,825	"
Celery	1,202	"
Parsnip	1,900	" from Germany alone.

With the exception of a few kinds of seeds which are easily grown in the farm garden, and a limited quantity of turnip seed grown on a commercial scale in Nova Scotia, as well as small quantities of sugar beet seed grown in the province of Ontario, Canada produced practically no vegetable seeds previous to 1915. When the war broke out it was realized by the Canadian Seed Trade and the Dominion Department of Agriculture that importations of seeds from European countries would be, if not cut off entirely, very seriously curtailed, and hence some concern was felt as regards the prospect of obtaining sufficient quantity of these seeds to meet the requirements of Canadian farmers. In view of this outlook, the Dominion Department of Agriculture decided to warn Canadian growers and to try to induce them to grow sufficient quantities of such seeds as mangel, sugar beet, turnip, carrot, parsnip, onion, etc., as they would need for their own use and also for the use of farmers whose climatic conditions might not be favourable to the production of seed. It was realized that on account of the difference in the cost of labour between European countries and Canada that some additional help would have to be given growers in order to induce them to grow seed. Hence, the Minister of Agriculture at Ottawa authorized the payment of subventions or bonuses to bona fide growers of the following kinds of seed.

SCHEDULE

Schedule of the kinds and varieties of seed, the amount of subvention that may be paid per pound of re-cleaned seeds to bona fide growers of them, and the minimum and maximum number of pounds of selected seeds of each, for which any person or company of persons may receive subvention.

Kinds of Seed	Subvention per pound	Number of pounds for which subvention may be paid	
		Minimum	Maximum
Mangel or Sugar Beet .....	.03	100	10,000
Turnips or Swedes .....	.04	50	5,000
Carrots, field or garden .....	.07	30	3,000
Beets, garden varieties .....	.10	20	2,000
Parsnip .....	.07	10	500
Radish .....	.09	10	1,000
Cabbage .....	.25	10	400
Tomato .....	.50	10	100
Onion .....	.25	10	2,000
Celery .....	.40	10	100
Lettuce .....	.20	10	500
Cucumber .....	.20	10	100
Water-melon .....	.20	10	100
Musk-melon .....	.30	10	100

The amount of these subventions varies according to the difficulty of growing the different kinds of seeds.

The Provincial Departments of Agriculture were also to render assistance chiefly in an educational way. The Seed Branch of the Dominion Department of Agriculture was commissioned in the fall of 1914 to initiate the work of vegetable

seed growing in the different provinces. The Seed Branch officers visited many of the farmers in the different districts of the country, placing the situation before them and requesting them to grow seed. The press also assisted by putting the situation before the public. The officers of the Dominion Experimental Farms Branch were to supply to interested farmers the technical information as regards growing the different kinds of seeds.

The work of the first year was to be more or less experimental to determine, if possible, districts suitable for growing the different kinds of seeds, which had hitherto been imported.

In British Columbia about twenty growers, chiefly in the Okanagan and Fraser River valleys grew seed last year. The results in these districts were very gratifying indeed, the yields in practically all cases being very much larger than the average yield in the province of Ontario. In some cases as much as three times the average yield was obtained, and in all cases where the crops had been handled properly the quality of the seed was very much superior to the usual run of imported seed of the same kinds.

As regards the cost of the production, not much data are at our disposal as farmers do not usually keep records of cost. Mr. Moore, Superintendent of the Dominion Experimental Farm, Agassiz, however, kept records of cost of production of mangel seed and after valuing the seed production at 18 cents per pound, declared a net profit of \$170.90 per acre. These figures are based on a small area, where most of the work was done by hand. If a larger area had been used the cost of production would have been proportionately smaller.

The Seed Branch also assisted in marketing the seed grown by putting the farmers in touch with the seed merchants of Canada. Lists of the chief seed merchants were mailed to each of the growers and likewise lists of the growers with seed for sale were sent to the larger seed merchants of the Dominion.

The success of last year's work in growing field root and vegetable seeds in Canada was so marked that the Department of Agriculture is now endeavouring to establish seed growing on a permanent basis. It is the aim of the Department now to release Canada from the dependence on foreign seed supplies by:

1. Encouraging farmers and gardeners in general to grow sufficient good seed of all kinds and varieties required in their localities.
2. Acting as intermediary between reliable merchants and those growers in any of the provinces who have shown themselves reliable.
3. Organizing centres for the production for Canadian wholesale and retail requirements of those kinds and varieties most valuable, considering the needs of different climates, soils and markets.
4. Assisting in procuring apparatus needed in seed centres for harvesting, threshing and cleaning seed ready for market.
5. Gradually introducing guarantee system in respect to place of growth, variety and strain of seed, and percentage vitality.

A system of inspection of crops will be followed, under which a Seed Branch officer will inspect the crops while growing to see that they are true to variety. He will also inspect the seed after it is threshed and cleaned and take samples of all lots for test at the Seed Laboratory, Calgary. Certificates of the reliability of the seed will be issued to growers by the Seed Branch. These will act as a guarantee

to the growers as to the germination quality of the seed. Growers will be encouraged and assisted in making contracts with seed merchants.

This year the Seed Commissioner has commissioned an expert horticulturist in the province of Ontario, and one in the province of Quebec, to look after the organization and development of the seed growing industry in these two provinces. Next year it is his intention to appoint such an expert horticulturist for the province of British Columbia. It will be his duty to assist growers in every possible way, advising them in selecting roots, growing and harvesting the seed grown. He will study market conditions throughout the whole of Canada and aid growers in marketing their seed. He will advise them as to the varieties and quantities that may be safely grown each year. He will organize seed growing centres and assist in procuring apparatus that may be needed for harvesting and threshing and also cleaning the seed for market.

By such a plan it is hoped that the whole field root and vegetable seed growing industry in British Columbia may be kept in a thoroughly organized condition so that Canadian farmers may be supplied with seeds of the very best quality and that growers may be so aided and advised that they will not only sustain no financial loss but that they may each year obtain very substantial profits from seed growing.

It is very probable that in the district of Kamloops such a seed growing centre will be established for growing those seeds which prove to grow satisfactorily under these climatic conditions. Especially will it be desirable to grow seeds on irrigated land, the advantage of such conditions being the perfect control of water supply and a dry atmosphere while crops are maturing and are being harvested. (Applause.)

CHAIRMAN: I think this question of growing seed is an important one and if there is any question any one would like to ask, please do so now.

DELEGATE: In our section of the country we raise timothy, clover, alfalfa, and wheat, oats and barley. I would like to get an opinion as to the quantity of seeds to be sown to the acre. Some tell us we should put on twenty to twenty-five pounds of timothy and clover, and others eight pounds to twelve mixed. Others say that alfalfa should be from fifteen to twenty-five pounds; wheat from sixty to ninety pounds; oats two bushels per acre; barley two bushels per acre. This is an important point and I would like to hear something about it.

MR. FAIRFIELD: I heard the first part, I think, of the question, but I do not think I got the whole of it. I think I could answer that question definitely for Alberta conditions. As Mr. Winslow pointed out, different conditions affect fruit in different localities. The same applies to wheat crops, and I can tell you about the amount of seed we find best to sow in Alberta, but I am not prepared to say it is best to sow here. We find that for grains on irrigated lands it paid us to sow much more than we would on dry lands. The average results for five years for wheat, oats and barley is something like this: Wheat, about a bushel and a half or, putting it in pounds, from 90 to 105 pounds for wheat; oats, about 100 pounds. Seeding with grasses on irrigated lands, we find 15 to 20 pounds of alfalfa; and for

timothy we seed it lighter—just why, we do not know—from 4 to 7 pounds of timothy gives us better results and better seed. There is something in the character of our soil that is the reason for that. For mixtures of alfalfa and timothy we are doing practically nothing or with clover on the prairie yet. We sow just as much alfalfa as if we did not sow timothy and then add about four pounds of timothy to the alfalfa.

CHAIRMAN: I will now call upon Mr. Fairfield to make his report as Chairman of the Credential Committee.

MR. FAIRFIELD: Your Committee on Credentials have to report that we find 149 registered in attendance at this convention. Of this, 85 are accredited delegates. (Applause.)

The names of the accredited and registered delegates are as follows:

F. W. Anderson, Heffley Creek Water Users' Association, Heffley Creek, B.C.
 C. H. Attwood, Calgary, Dominion Water Powers Branch.
 James Aird, Kamloops, B.C.
 F. S. Auld, Department of Agriculture, Regina, Sask.
 J. C. Adams, Chase, B.C.
 J. L. Brown, Kamloops, B.C.
 W. J. E. Biker, Board of Trade, Nelson, B.C.
 Mrs. W. J. E. Biker, Nelson, B.C.
 Don Bark (A.R. & I. Company), Strathmore, Alberta.
 Mrs. Don Bark, Strathmore, Alberta.
 Senator Hewitt Bostock, Monte Creek, B.C.
 Isaac Blair, West Summerland, B.C.
 G. D. Brown, Kamloops, B.C.
 Thomas Bunting, Heffley Creek, B.C.
 Albert E. Boyde, Pritchard, B.C.
 W. G. Benson, Kelowna, B.C.
 I. R. Brown, Summerland, B.C.
 H. J. Bowling, Pritchard, B.C.
 C. G. Cline, B.C. Hydro-Survey, Kamloops, B.C.
 D. Roy Cameron, Dominion Forestry Branch, Kamloops, B.C.
 F. W. Crandall, Calgary, Alberta.
 James Clapperton, North Kamloops, B.C.
 V. D. Currie, Kamloops, B.C.
 E. M. Carruthers, Kelowna, B.C.
 J. Connor, North Thompson Agricultural Association.
 W. Charlton, Pritchard, B.C.
 R. Chetwynd, Walhachin, B.C.
 R. H. Campbell, Director of Forestry, Ottawa, Ont.
 F. W. Carpenter, Bassano, Alberta.
 A. D. Campbell, C.P.R., D.N.R., Calgary, Alberta
 A. O. Cochrane, Vernon, B.C.
 James Dougall, Agricultural Agent, C.P.R., Winnipeg, Manitoba.
 John Dixon, Maple Creek, Saskatchewan.

- A. S. Dawson, C.P.R., D.N.R., Calgary, Alberta.
C. L. Dodge, Strathmore, Alberta.
Mrs. C. L. Dodge, Strathmore, Alberta.
H. O. English, Department of Agriculture, Victoria, B.C.
A. E. East, Walhachin, B.C.
John Enges, Pritchard, B.C.
J. East, Walhachin, B.C.
A. L. Fryberger, Bassano, Alberta.
W. H. Fairfield, Lethbridge, Alberta.
Fred J. Fulton, Kamloops, B.C.
J. R. Fryer, Seed Branch, Calgary, Alberta.
Geo. Frolek, Rose Hill, B.C.
P. E. French, Vernon, B.C.
J. W. Gibson, Educational Department, Victoria, B.C.
Dr. H. H. George, Kamloops, B.C.
James A. Gill, Kamloops, B.C.
C. W. Greer, Black Loam P.O., B.C.
W. Grundy, Walhachin, B.C.
H. P. Hodges, Kamloops, B.C.
W. T. Hicks, A.R. & I. Co., Lethbridge, Alberta.
Mrs. W. T. Hicks, Lethbridge, Alberta.
E. A. Howes, University of Alberta, Edmonton, Alberta.
R. H. Helmer, Experimental Station, Summerland, B.C.
R. B. Homersham, Heffley Creek, B.C.
G. E. Hyde, C.P.R., D.N.R., Calgary, Alberta.
G. S. Herringer, Maple Creek, Saskatchewan.
W. R. Hustin, Heffley Creek, B.C.
Wm. Harrison, Pritchard, B.C.
E. W. Hogan, Department of Agriculture, Victoria, B.C.
Edward Hole, Walhachin, B.C.
— Hemming, Walhachin, B.C.
D. R. Ilsley, Armstrong, B.C.
F. M. Iratt, Walhachin, B.C.
D. B. Johnstone, Kamloops, B.C.
James Johnstone, Nelson, B.C.
F. J. Jounsey, Pritchard, B.C.
G. K. Jones, Kamloops, B.C.
Mrs. G. K. Jones, Kamloops, B.C.
E. B. Knight, White Valley Irrigation and Power Co., Vernon, B.C.
L. S. Klinek, University of British Columbia, Vancouver.
J. R. Kinghorn, Sorrento, B.C.
C. E. Lawrence, Local Secretary, W.C.I.A., Kamloops, B.C.
C. E. Lawrence, Jr., Kamloops, B.C.
J. L. Logie, Summerland, B.C.
Rev. C. R. Littler, Kamloops, B.C.
James Livingstone, Tranquille, B.C.
Robert H. Lyons, Heffley Creek, B.C.

Father Lejeune, Kamloops, B.C.
G. A. Morrison, Box 1379, Calgary, Alberta.
Mrs. G. A. Morrison, Box 1379, Calgary, Alberta.
J. H. McCulloch, Quesnel, B.C.
F. D. McNaughton, Brooks, Alberta.
A. L. McNaughton, Kamloops, B.C.
W. S. Mitchell, Notch Hill, B.C.
P. H. Moore, Experimental Station, Agassiz, B.C.
H. F. Mytton, Fruitlands, Kamloops, B.C.
R. P. Mytton, B.C. Fruitlands Co., Kamloops, B.C.
J. McCaig, Agricultural Publications, Edmonton, Alberta.
Alderman George Macbeth, Kamloops, B.C.
W. T. MacDonald, Department of Agriculture, Victoria, B.C.
J. McKechnie, Kamloops, B.C.
A. McKay, Kamloops, B.C.
J. McConnell, Kamloops, B.C.
A. McGraw, Vernon, B.C.
J. F. McDermind, Pritchard, B.C.
N. Hugh Nixon, North Kamloops, B.C.
V. A. Newhall, Hydrometric Surveys, Department of the Interior, Calgary, Alta.
Andrew Noble, Sr., Kamloops, B.C.
T. Noble, Louise Creek, B.C.
R. Noble, Long Lake, B.C.
A. G. Noble, Knoxford, B.C.
Wm. Normand, Pritchard, B.C.
F. H. Peters, Commissioner of Irrigation, Calgary, Alberta.
G. E. Parham, Experimental Station, Invermere, B.C.
S. G. Porter, Irrigation Branch, Department of Interior, Calgary, Alberta.
G. H. Patrick, Strathmore, Alberta.
A. Peterson, Mound Olie, B.C.
W. P. Pritchard, Pritchard, B.C.
C. W. Peterson, *Farm and Ranch Review*, Calgary, Alberta.
Norman S. Rankin, Secretary W.C.I.A., Calgary, Alberta.
Dr. J. G. Rutherford, C.P.R., Calgary, Alberta.
John Redman, Knutsford, B.C.
James Ross, Tranquille, B.C.
R. S. Stockton, Strathmore, Alberta.
Mrs. R. S. Stockton, Strathmore, Alberta.
Robert J. C. Stead, Calgary, Alberta.
E. R. Simpson, Summerland, B.C.
F. J. Smith, Hefley Lake, B.C.
E. R. Simpson, West Summerland, B.C.
R. G. Swan, Can. Soc. C.E., Vancouver, B.C.
J. F. Sweeting, Calgary, Alberta.
J. P. Shannon, Kamloops, B.C.
F. E. Simpson, Kamloops, B.C.
L. F. Stobart, Kamloops, B.C.

C. G. Smith, Salmon Arm, B.C.
D. W. Strachan, Tranquille, B.C.
J. F. Smith, Indian Agent, Kamloops, B.C.
R. A. Travis, Bassano, Alberta.
Mrs. R. A. Travis, Bassano, Alberta.
Mayor A. M. Tyrrell, Kamloops, B.C.
H. Thornber, Department of Agriculture, Victoria, B.C.
Ald. Jos. E. Tedder, Kamloops, B.C.
Dr. Tolmie, Department of Agriculture, Victoria, B.C.
Professor W. S. Thornber, Pullman, Washington, U.S.A.
E. C. Thrupp, Kamloops, B.C.
E. Stuart Wood, Kamloops, B.C.
F. E. R. Wollaston, Coldstream Estate Co., Vernon, B.C.
Dr. F. F. Wesbrook, University of British Columbia, Vancouver, B.C.
Frank Woodward, North Kamloops, B.C.
W. A. Wylie, Kamloops, B.C.
R. M. Winslow, Department of Agriculture, Victoria, B.C.
James White, Commission of Conservation, Ottawa, Ont.
J. H. Woodward, North Kamloops, B.C.
R. G. Williamson, Maple Creek, Saskatchewan.
W. J. Whiteside, Toronto, Ont.
Mrs. W. J. Whiteside, Toronto, Ont.

CHAIRMAN: I will now ask Mr. Peters to make his report on Resolutions.

MR. PETERS: These resolutions are now open for discussion as they are read out and then they will be in order to be voted on.

Number One. Proposed by President G. R. Marnoch, of the Lethbridge Board of Trade; seconded by Secretary D. J. Hay, that:

Whereas the Western Canada Irrigation Association is informed by the Lethbridge Board of Trade that the preliminary surveys contemplating the extension of irrigation facilities to areas south and east of Lethbridge have temporarily been suspended and

Whereas the desirability of extending irrigation to lands suitable for its use is becoming increasingly more evident as the live stock industry in Western Canada progresses,

Resolved that this association would respectfully urge the Minister of the Interior, the Honourable Dr. W. J. Roche, to continue these surveys.

MR. FAIRFIELD: I would like to have the privilege of saying a word in connection with this resolution. Unfortunately the President of our Board of Trade of the city of Lethbridge, Mr. G. R. Marnoch, cannot be present. There is nothing contentious, of course, about this resolution. I merely want to point out that it is a very important thing to the district affected which lies adjacent to Lethbridge. A great deal, if not all, of this land has already settlers on it and they need the water very much. This particular place illustrates the point that Mr. Peters brought out in that very interesting address of his in regard to district irrigation projects.

We already have the people or a great number of the people on the land, but the surveys have been stopped. We feel in that district that it would be not only of value to those interested, but it will add a great deal to the wealth of the province if that land can be developed properly and the only way we can see that it can be worked properly is by the early application of water.

CHAIRMAN: I will put the resolution to the meeting. All in favour of the resolution, say "Aye"; to the contrary, — (None).

I declare the resolution is carried.

MR. PETERS: Resolution Number Two.

Moved by A. E. Boyd, Pritchard, B.C.; seconded by Wm. Harrison, Pritchard, B.C.:

That the Government be urged to consider the putting of water on to the river flats and lower benches on the South Thompson river using the existing creeks for the lands higher up.

MR. BOYD: I have much pleasure in moving that resolution and would ask the association to ask the Government to give us assistance in putting water on the South Thompson valley.

MR. HARRISON: I take pleasure in seconding this resolution. The idea is to survey the water in certain creeks and bring them through Harper valley which will leave the water a thousand feet above the level of the South Thompson. It would bring a lot of land between Shuswap and Ducks at present without water under irrigation. It could be taken through by pipe to the north side and as you will all have noticed in passing the South Thompson, an oasis in the desert, it would make it to blossom like the Garden of Eden. What we want them to do now is to assist us in getting the water.

MR. THRUPP: I want to assure the people of Pritchard that I am not criticising them, but I think it should be a matter for action under section 13 of the Water Act of 1914. It would be quite a simple matter for the Pritchard people to act under this section and to proceed under the Irrigation Corporation Act. I think it would be rather a pity if this association should pass a resolution asking the Government to pass a scheme under a new principle. The Irrigation Corporation Act has been thoroughly discussed and approved by this association. It would be much better if the Pritchard people would be content with a resolution asking for such treatment. I know other districts which would be served in the same manner as the Pritchard people desire, and I was going to ask the Pritchard people to accept an amendment under which everybody would be interested and which would apply to all other districts in the same position. I would suggest something like this: That the Government be asked to give its consideration to any schemes of irrigation which would improve the beneficial use of water.

MR. MYTTON: I would second such an amendment.

MR. HARRISON: That would suit our views entirely and we would agree to such an amendment.

MR. LAWRENCE: It is something strange to hear Mr. Thrupp move for action by the Government. What the Pritchard people want to do is something that the Government can take hold of. I believe there is enough on paper already and we who are on the land know it to our cost. These projects are beyond independent and individual action. It must be done this side of the Rockies, the same way that it is done on the other side. If we could bring Mr. Peters over here and have him deal with the problems the same way as he does over in Alberta, we would be very much better off. Instead of having to dam up creeks and bring water through lakes for miles it would be helping us out. Instead of having sage brush along the river as we have now, we should be having an irrigation proposition with mixed farming and live stock. It is our experience and the experience of others that we are kept poor after spending all the money we brought to the country labouring to bring the water on to the land. (Applause.)

MR. BOYD: That is exactly the position of the Pritchard people. I have been struggling on 60 acres of dry land to make a living. I came here with \$1,500 and it is all spent now. If the Government would come out and assist us in getting water and make some surveys for us, we could live on our land. Instead of living there, I have to go out and help a man who is making hay on his place. If I could not do that I would have to get out. I claim that the country along the South Thompson river is one of the finest countries in British Columbia. We have to get water and it costs us money. We have not the money and we know the Government has. We have tried and know that any piece of land that has water on it by irrigation methods or by being able to hold back the snow water for it, will grow a crop and every acre of my land would grow a crop and make me independent if I were in a position to apply water to it. As it is I have to leave my land while I rustle for a living.

MR. MYTTON: My sole reason in seconding this motion was that I thought it unfortunate for this association to pass a resolution asking the Government to aid any one district. We are a Western Canada association and I think the Government should take over the whole of the irrigation systems of the country and not aid any part in particular. I am totally in favour of helping the Pritchard people or any other community of people, but I do not think we should take any particular locality of our province and ask the Government to aid that one part.

MR. WOODWARD: I think, in asking the resolution, the Government could hardly refuse. There are always two sides to the question. On the Lower Fraser river the Government has expended money to keep the water off the lands. We in the upper country are asking them to spend money to put the water on the land.

MR. PETERS: I would like to explain that when this resolution came before the Committee, I think it was the understanding of the Committee that in passing this resolution we felt that all that the people of Pritchard were asking was that the Government of British Columbia send somebody out to investigate the conditions with a view to giving these interested men some idea as to whether the thing could be worked out, or not, and how it could be worked out. I make the state-

ment because it seems to get away from the point that Mr. Mytton objects to, namely, asking the Government to do something for one particular section. That is the way we looked upon this resolution.

CHAIRMAN: You have heard the resolution as moved by Mr. Boyd and seconded by Mr. Harrison, and you have heard the amendment moved by Mr. Thrupp and seconded by Mr. Mytton. Did I understand that Mr. Boyd and Mr. Harrison were willing to withdraw their resolution?

MR. HARRISON: We did not really mean it to affect only the South Thompson River district.

CHAIRMAN: Of course, you have to vote on the amendment first of all.

MR. HARRISON: Then we will allow our motion to stand.

CHAIRMAN: I will read the amendment over: "Moved by Mr. Thrupp, seconded by Mr. Mytton, that the Provincial Government be asked to give favourable consideration to any schemes of irrigation corporations, where transfers of water licenses to new lands would improve the beneficial use of the water in the district."

Those in favour of the amendment, please say "Aye"; to the contrary,—

MR. BROWN: I would like to see a standing vote taken and that only members be allowed to vote on it. The original motion is a concrete motion and the amendment is one that may be put up to the Government and left in their hands for any indefinite time.

CHAIRMAN: I have been asked to read both the amendment and the resolution again and then I will ask you to stand up and vote. (Chairman reads resolution and amendment.)

Vote on the amendment results in 17 in favour of it; 14 against it, therefore the amendment is carried.

MR. PETERS: The next resolution is:

Moved by Mr. E. W. Carruthers (Kelowna); seconded by Mr. W. P. Pritchard (Pritchard),

Whereas there is a serious danger in many parts of the dry belt of British Columbia that the farmer may be unable to receive the necessary supply of irrigation through the inability of various irrigation companies to carry out their original contracts as conveyors of water,

Therefore be it resolved that this convention in open meeting assembled, do urge the Provincial Government of British Columbia to take immediate steps to deal with this serious problem, and thus restore confidence and ensure an adequate water supply to the settler.

MR. CARRUTHERS: This motion more or less overlaps the amendment to the last motion, but at the same time I think it is of such importance that I make no excuse for speaking to it. Before going further I would like to express my regret

and I think I am voicing the opinion of many here that the British Columbia Government has not thought this convention worthy of sending representatives here to discuss this problem of irrigation. This problem is, I think, that many water companies and water municipalities have gone in in good faith and put in large irrigation works and now find they have bitten off more than they can chew, with the result that many of them are now drifting off into deep water. This feeling of uneasiness and insecurity should be eliminated as near as possible so that people who are living here in one of the most productive parts of the province should be able to speak with authority that the water is here and that we can get it. I do not for one moment intend to suggest remedies; I think that point is much too contentious, but if, as many of our officials claim, the water carrying companies come under the head of water companies, it should be put up to them to settle this feeling of uneasiness and thus satisfy the settler who is always trying to bring some other settler here to increase prosperity. This is a matter which applies generally all over British Columbia. It is essentially a British Columbia motion, but at the same time I can assure the delegates from the sister provinces that it is a matter of very serious import to us.

MR. PRITCHARD: I have much pleasure in seconding this motion. If any of the visiting delegates looked out of the windows as they came through here they would see the land where the water had been applied. There is a mighty lot of dry land here and instead of having a placard "For the land's sake, give us more water," I would say "For the land's sake, ask the Government to give us water."

CHAIRMAN: (Asks the convention to vote on the above motion and the result is that the motion is carried.)

MR. PETERS: I will read the next resolution.

Moved by A. S. Dawson; seconded by James White:

Resolved that the delegates of the Tenth Annual Convention of the Western Canada Irrigation Association do express their sincere thanks for the admirable entertainment and the much appreciated hospitality that has been extended to them during their stay in the city of Kamloops.

Resolved that our thanks are hereby extended to Chairman Brown, Secretary Lawrence and the Local Board of Control, for the efficient manner in which they arranged and saw to the comfort and welfare and the entertainment of all visitors and delegates.

Resolved, that the thanks of this convention are hereby extended to His Worship Mayor Tyrrell and the members of the City Council, and to Alderman Johnstone and the Executive of the Board of Trade of Kamloops for their hospitality.

Resolved, that the thanks of this convention are hereby extended to the Medical Superintendent and Mr. Strachan, of Edward VII. Sanatorium, for the entertainment and hospitality shown to the visitors and delegates at the Sanatorium and Alexandra Ranch.

Resolved, that the delegates to the Tenth Annual Convention of this association hereby express their appreciative thanks to the members of the Fire Department of the city of Kamloops, who, under the direction of Fire Chief McKay, gave as a feature of our entertainment an excellent drill on Tuesday; and that we compliment

them on their agility and ability and further compliment the city of Kamloops upon having such an up-to-date apparatus so efficiently handled. (Loud applause.)

CHAIRMAN: Apparently those resolutions are carried without further vote. I declare them carried unanimously.

MR. PETERS: The next is a motion as published on the official call, which is as follows:

1. To add after paragraph 9, article VII, section I, two new clauses as hereunder:

"The Comptroller of Water Rights of British Columbia and one delegate from the Water Rights Branch of the Department of Lands."

"The Chief Engineer of the British Columbia Hydrographic Surveys."

So that this paragraph will now read as follows:

"The Dominion Commissioner of Irrigation and two delegates, one from the Irrigation Branch and one from the Hydrographic Surveys Branch of the Irrigation Department.

"The Comptroller of Water Rights of British Columbia and one delegate from the Water Rights Branch of the Department of Lands.

"The Chief Engineer of the British Columbia Hydrographic Surveys."

2. To add to paragraph 17, article VII, section I, the words "The Dominion Superintendent of Irrigation and the Dominion Superintendent of Water Powers."

So that this paragraph will now read:

"The Dominion Superintendent of Irrigation, the Dominion Superintendent of Forestry, the Dominion Superintendent of Water Powers, and the Chief Forester of British Columbia."

CHAIRMAN: You have heard the resolution. All in favour say "Aye."

To the contrary?

I declare the resolution carried. That ends the resolutions unless some lady or gentleman has anything further to bring forward.

MR. BROWN: This evening, at half past seven, there will be cars at the Leland Hotel. You have been riding around the country so far, but we now want to show you the city. The Superintendent of the Old Men's Home is very anxious for you to see the garden there. If any of you are machinists, mention it to the car driver and he will take you to the power plant of the city of Kamloops, which is rated by experts as second to none in the Dominion. After the trip is over you will be welcomed at the theatres in the city, and the only price of admission will be the showing of your badge. (Applause.) I would also remind you of the programme for to-morrow morning.

CHAIRMAN: The next item on the programme is the selection of the next place of meeting.

MR. WILLIAMSON: (Speaks as to the invitation of the town of Maple Creek for the next place of meeting.)

MR. AULD: (Also speaks as to the invitation, which is received with applause.)

Mr. Fairfield stated that he had been one of a number from Lethbridge who were to invite the convention to meet at that city next year, but as he appeared to be the only one left from Lethbridge he would withdraw in favour of Maple Creek. (Applause.)

MR. BROWN: I would now make the motion that we meet in Maple Creek next year.

MR. FAIRFIELD: I would second that motion.

CHAIRMAN: It has now been moved by Mr. Brown and seconded by Mr. Fairfield that this convention meet next year in Maple Creek, but before the motion is voted upon I think Mr. Biker, of Nelson, would like to say a few words.

MR. BIKER: I have just a few words to say and that is, I am here as the representative of the Mayor and city of Nelson, which is very much interested in the doings of this convention, and all I wish to say now is that we certainly invite this convention to meet there the year after next. (Applause.)

CHAIRMAN: The motion is ready to be voted upon.

After a vote was taken the Chairman declared the motion was carried.

CHAIRMAN: The next item is the election of officers. The list of officers suggested by the Committee is as follows:

Honorary President—Honourable W. J. Roche, Minister of the Interior, Ottawa, Ontario.

President—Honourable W. R. Motherwell, Minister of Agriculture, Regina, Saskatchewan.

First Honorary Vice-President—Honourable Duncan Marshall, Minister of Agriculture, Edmonton, Alberta.

Second Honorary Vice-President—Honourable W. R. Ross, Minister of Lands, Victoria, B.C.

First Vice-President—Honourable Senator H. Bostock, Ducks, B.C.

Second Vice-President—G. R. Marnoch, President, Board of Trade, Lethbridge, Alberta.

EXECUTIVE COMMITTEE

Chairman—F. H. Peters, Commissioner of Irrigation, Calgary, Alberta.

R. G. Williamson, Maple Creek, Saskatchewan.

W. D. Trego, Gleichen, Alberta.

A. S. Dawson, Chief Engineer, Department of Natural Resources, C.P.R., Calgary, Alberta.

W. E. Scott, Deputy Minister of Agriculture, Victoria, B.C.

Jas. L. Brown, Kamloops, B.C.

Jas. Johnstone, Nelson, B.C.

F. E. R. Wollaston, Vernon, B.C.

Moved by Mr. Porter; seconded by Mr. Carruthers:

That the list of officers as read by the Chairman be adopted.

After the vote was taken, the Chairman declared the motion carried.

CHAIRMAN: That concludes the programme, and I think I may be allowed to congratulate the convention on the very excellent papers and addresses listened to and the discussions carried on. I think we should be very thankful to the gentlemen who have come here to address us and I know it will be of very great help to us. I only regret that more of the farmers in the local districts just outside of here have not attended the meeting as we would have liked them to.

MR. WOLLASTON: I would like to speak to you from the point of the ordinary delegate. To many people who attend conventions like this, the Secretary is more or less a nonentity and most people know nothing about him or his work. Mr. Rankin said the other night that at the first convention he attended he made good friends at Kelowna. Mr. Rankin has attended five conventions, three of them in the prairie country and two in British Columbia, and those two being held in the Okanagan district, and I do not think there have been better conventions. I think in the Okanagan country we have a very special interest in Mr. Rankin, and speaking for the people of that district I wish him every success and hope he will come back to us. Mr. Rankin's title is Permanent Secretary, and it strikes me that that is a life sentence. We should give him leave of absence so that he can come back to us. When Mr. Rankin gets over to the trenches he will find other irrigators there. Some have attended other conventions. There are some who have gone who will not come back to us, but we hope and pray that Mr. Rankin will come back to attend once more to the work of this association. We should all do our best while Mr. Rankin is away to boost the Western Canada Irrigation Association, so that when he comes back and attends our convention he will say that it is the best he ever attended. I would now call for three cheers and a tiger to Mr. Rankin.

The convention then sang "For he's a Jolly Good Fellow."

MR. RANKIN: I thank Mr. Wollaston very very much and also all the other delegates at this convention. I would like to say that one of the most pleasant recollections that I will carry away is the fact that Mr. Auld has come to the convention representing the province of Saskatchewan and has made the promise that the Government will give us a grant towards our next convention, and nothing could have given me so much pleasure. I will now lead in singing

GOD SAVE THE KING!

The final session of the Tenth Annual Convention of the Western Canada Irrigation Association was held at the Railway Station, Kamloops, at 8 a.m., Friday, July 28, to meet H.R.H. the Duke of Connaught and of Strathearn, K.G., etc., etc., Governor-General of Canada.

On arrival of the vice-regal train, His Royal Highness very cordially greeted Honourable Senator Bostock, who, commenting on His Royal Highness' well known interest in all matters pertaining to agriculture, formally asked him to become the

patron of the association. His Royal Highness having graciously agreed and accepted the patron's badge, the latter was fastened to his coat by the Local Secretary.

Several ladies were then presented, who asked the acceptance of bouquets of flowers for the Duchess and Princess Patricia. Then followed the presentation of the Executive of the association, with each of whom His Royal Highness shook hands.

His Royal Highness then turned to a line of wounded soldiers returned from the front, to each of whom he spoke most sympathetically, enquiring of their service and wounds. On being told that a number who had been gassed were at the King Edward Sanatorium, not sufficiently recovered to be present, His Royal Highness desired a kindly message of sympathy to be sent them.

This informal ceremony concluded, His Royal Highness was heartily cheered as he boarded the train, which slowly drew out of the crowded station to the singing of the National Anthem, His Royal Highness smilingly bowing his acknowledgment from the platform of the end car.

Senator Bostock then adjourned the convention *sine die*.

LIST OF PUBLICATIONS OF THE IRRIGATION BRANCH

Annual Stream Measurement Report, 1909 to 1914.

Annual Irrigation Report, 1906 to 1915.

Irrigation Surveys and Inspections Report, 1915; (1915-16).

Western Canada Irrigation Association Report (1st to 9th Convention).

International Irrigation Congress Report (1914).

Bulletin No. 1 (Irrigation in Saskatchewan and Alberta).

Bulletin No. 2 (Alfalfa Culture).

Bulletin No. 3 (Climatic and Soil Conditions, C.P.R. Irr. Block).

Bulletin No. 4 (Duty of Water Experiments and Farm Demonstration Work).

PAMPHLETS:

Address by Mr. S. G. Porter; "Practical Operation of Irrigation Works";
Extract from W.C.I.A. Report, 1914.

" " Dr. Rutherford; "Inter-dependence of Farm and City";
Extract from W.C.I.A. Report, 1914.

" " Mr. Don H. Bark; "The Actual Problem that Confronts the
Irrigator";
Extract from W.C.I.A. Report, 1914.

" " Mr. Don H. Bark; "Practical Irrigation Hints for Alberta";
Extract from W.C.I.A. Report, 1915.

" " Mr. Don H. Bark; "Alfalfa Growing";
Extract from W.C.I.A. Report, 1915.

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